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DENVER, COLORADO

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348-18S

The PHOTOFACT Servicer

Vol. 35
Sets 347 & 348

★ *Published for all users of Howard W. Sams' Photofact Folders* ★

Feb. 15, 1957

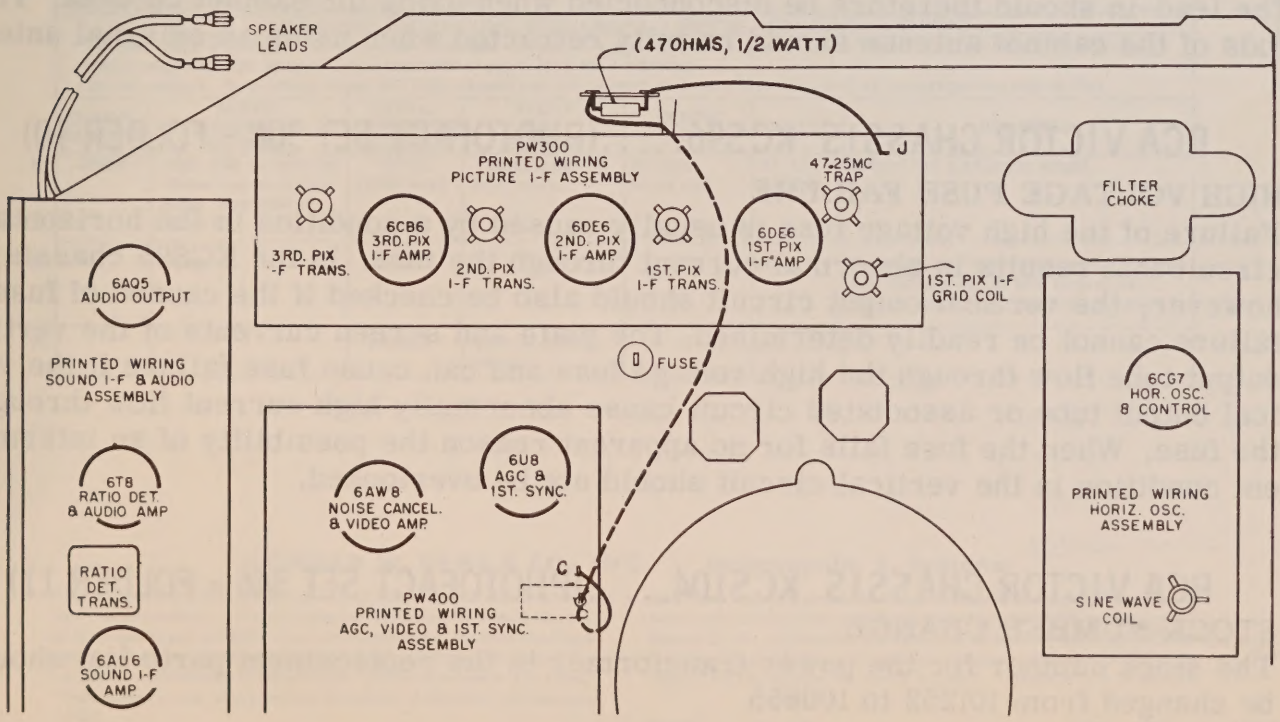
SERVICE HINTS

The following service hints are brought to you through the courtesy of the RCA Victor Television Div. of the Radio Corp. of America.

RCA VICTOR CHASSIS KCS103.....(PHOTOFACT SET 345 - FOLDER 13)

PICTURE RINGING

In some receivers employing this chassis it is possible to have vertical lines on the left side of the rater due to the position of the AGC lead from "C" of PW400 to "J" of PW300. To prevent stray pickup, the AGC lead should be disconnected from "C" of PW400 and rerouted as shown below. Install a terminal board with a 47 Ω resistor on the front side of the chassis as indicated on the drawing. Connect the wire from "J" of PW300 to the resistor and route another lead from the other terminal through the hole in the chassis. This lead should be dressed along the chassis between the fuse (M1) and capacitor C2, through the cutout in the chassis, under the mounting foot of the printed circuit board, and over the existing wires to "C" of PW400.


SPEAKER LEADS
(470HMS, 1/2 WATT)
PW300 PRINTED WIRING PICTURE I-F ASSEMBLY
47.25MC TRAP
J
FILTER CHOKE
6CB6 3RD. PIX I-F AMP
6DE6 2ND. PIX I-F AMP
6DE6 1ST PIX I-F AMP
3RD. PIX -F TRANS.
2ND. PIX I-F TRANS.
1ST. PIX I-F TRANS.
1ST. PIX I-F GRID COIL
6AQ5 AUDIO OUTPUT
PRINTED WIRING SOUND I-F & AUDIO ASSEMBLY
FUSE
6CG7 HOR. OSC. & CONTROL
6T8 RATIO DET. & AUDIO AMP
6AW8 NOISE CANCEL. & VIDEO AMP
6U8 AGC & 1ST. SYNC.
PRINTED WIRING HORIZ. OSC. ASSEMBLY
RATIO DET. TRANS.
C
PW400 PRINTED WIRING AGC, VIDEO & 1ST. SYNC. ASSEMBLY
SINE WAVE COIL
6AU6 SOUND I-F AMP

RCA VICTOR CHASSIS KCS100B.....(PHOTOFACT SET 336 - FOLDER 14)

VERTICAL BOUNCE OR POOR LINEARITY

Vertical "breathing" or bounce of the raster may be due to the vertical output transformer. In some cases this may be corrected by changing the value of R57 from 15KΩ to 8200Ω.

If por linearity of the upper portion of the raster is traced to the vertical output transformer it may be possible to improve the linearity by connecting a 120KΩ resistor across the transformer primary winding.

C64, in the plate circuit of the vertical output tube, can also cause poor linearity, vertical foldover, unstable vertical hold, or a bunching of the raster lines. The particular condition observed will depend upon the amount of leakage in the capacitor. The replacement item should be a 600 volt unit.

INTERMITTENT PICTURE FLASHING

Intermittent flashing of the picture may be due to insufficient spring pressure of the contact springs between the built-in antenna and connector board or between the connector board and chassis. To correct this condition, the spring contacts should be cleaned and the spring tension increased sufficiently to insure good contact.

HORIZONTAL RINGING

Excessive ringing (Vertical lines on left side of raster) may be corrected by changing the value of C79 (.033mfd) to .027mfd. C79 is connected from the width coil to the horizontal coils of the deflection yoke.

CABINET ANTENNA

It is important for proper operation when using the cabinet antenna to make sure the bottom rod section is fully extended. The cabinet antenna is connected to the input of the receiver by the action of the bottom rod section when it is pulled out. The terminals for an external antenna are always connected to the receiver input. The lead-in should therefore be disconnected when using the cabinet antenna. The rods of the cabinet antenne should be fully retracted when using an external antenna

RCA VICTOR CHASSIS KCS96.....(PHOTOFACT SET 308 - FOLDER 10)

HIGH VOLTAGE FUSE FAILURE

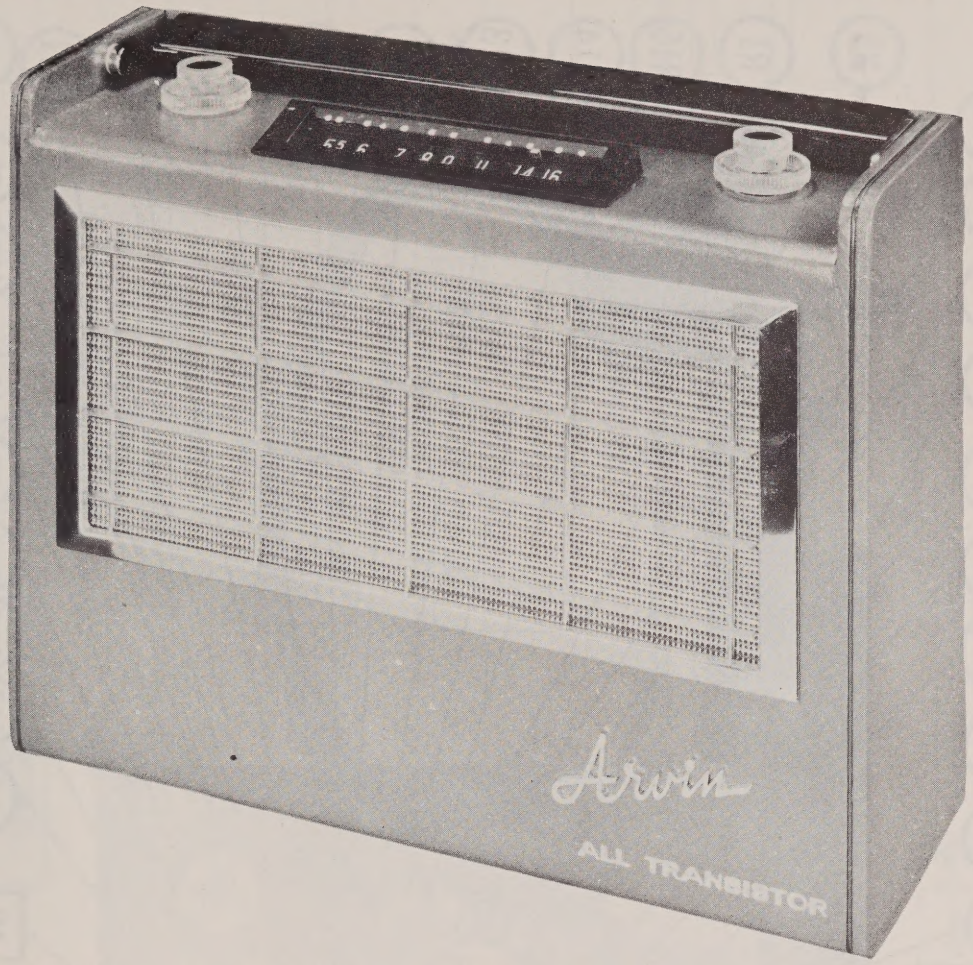
Failure of the high voltage fuse is usually caused by a condition in the horizontal circuit that results in abnormal current through the fuse. In the KCS96 chassis, however, the vertical output circuit should also be checked if the caused of fuse failure cannot be readily determined. The plate and screen currents of the vertical output tube flow through the high voltage fuse and can cause fuse failure it the vertical output tube or associated circuit cause abnormally high current flow through the fuse. When the fuse fails for no apparent reason the possibility of an intermittent condition in the vertical circuit should not be overlooked.

RCA VICTOR CHASSIS KCS104.....(PHOTOFACT SET 346 - FOLDER 11)

STOCK NUMBER CHANGE

The stock number for the power transformer in the replacement parts list should be changed from 101252 to 100855

ARVIN
MODEL 9562 (Ch. 1.40900)



ARVIN
MODEL 9562 (Ch. 1.40900)

TRADE NAME	Arvin Model 9562 (Ch. 1. 40900)
MANUFACTURER	Arvin Industries, Inc., Columbus, Ind.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	7. 5 Volts DC Positive Supply 1. 5 Volts DC Negative Supply
RATING	6MA @ 7. 5 Volts DC 2MA @ 1. 5 Volts DC
TUNING RANGE—BROADCAST	540KC - 1670KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to antenna stator lug on tuning gang. Low side to chassis.	455KC (400% Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal.	"	A6	"

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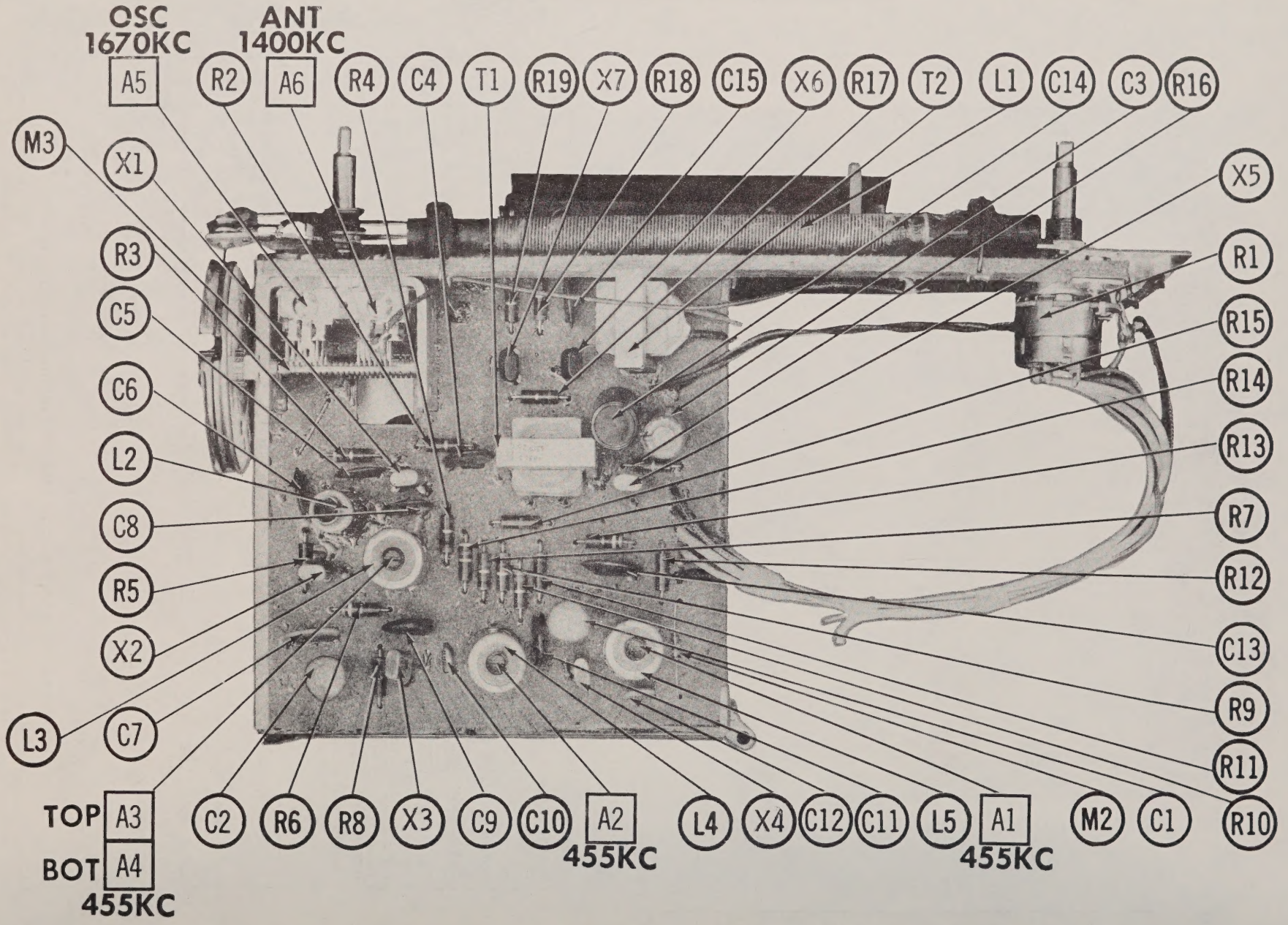


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	USE	TYPE	NOTES
X1	Mixer	2N212	
X2	Oscillator	2N211	
X3	1st IF Amplifier	2N94	
X4	2nd IF Amplifier	2N94	

ITEM No.	USE	TYPE	NOTES
X5	AF Amplifier	2N35	
X6	Output	2N214	
X7	Output	2N214	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	10	10	44279-3	SRE25V10	BBR10-25	TC22	ML10-15	MMT-0210	TE-1114
C2	50	10	44279-2	SRE12V50	BBR50-15	TC29			R2279*
C3	50	10	44279-2	SRE12V50	BBR50-15	TC29			R2279*

* Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C5	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C6	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C7	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C8	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C9A	20000		43956	BPD-2X02	DD-203	K085	ED-02		5HK-2S2	
B	20000				DD-203	K085	ED-02			
C10	9					Z017				
C11A	20000		43956	BPD-2X02	DD-203	K085	ED-02		5HK-2S2	
B	20000				DD-203	K085	ED-02			
C12	24				TCZ-24	Z025	TCO-24			
C13	50000			BPD-05						
C14	.1	200		P288N-1	DF-104	CUB2P1		ACE401	2SE-P1	
C15	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2200Ω	1/2	43816				UF252L	Tone
B	2200Ω	1/2					UR252L	Volume
C	Switch						US-27	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ARVIN PART No.	IRC PART No.	
R2	2200Ω			BTS-2200	
R3	470Ω			BTS-470	
R4	1000Ω			BTS-1000	
R5	1000Ω			BTS-1000	
R6	3900Ω 5%			BTS-3900 5%	
R7	1000Ω			BTS-1000	
R8	820Ω 5%			BTS-820 5%	
R9	1000Ω			BTS-1000	
R10	1800Ω			BTS-1800	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ARVIN PART No.	IRC PART No.	
R11	1000Ω			BTS-1000	
R12	220Ω			BTS-220	
R13	3900Ω 5%			BTS-3900 5%	
R14	47K			BTS-47K	
R15	220Ω			BTS-220	
R16	1200Ω			BTS-1200	
R17	5600Ω 5%			BTS-5600 5%	
R18	82Ω			BTS-82	
R19	10Ω			BTS-10	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (INPUT)

ITEM No.	RESISTANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	540Ω	230Ω CT	43865						
	Turns Ratio								
	2.5 : 1								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	700Ω CT	3-4Ω	43864				TR-29		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3-4Ω	43999	52A1	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ARVIN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	44067-1				
L2	Osc. Coil	44066-1				
L3	1st IF Trans.	43872				
L4	2nd IF Trans.	43873				
L5	3rd IF Trans.	43960				

BATTERIES

ITEM No.	VOLTAGE	ARVIN PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	1 1/2V			950			2R		Requires 6

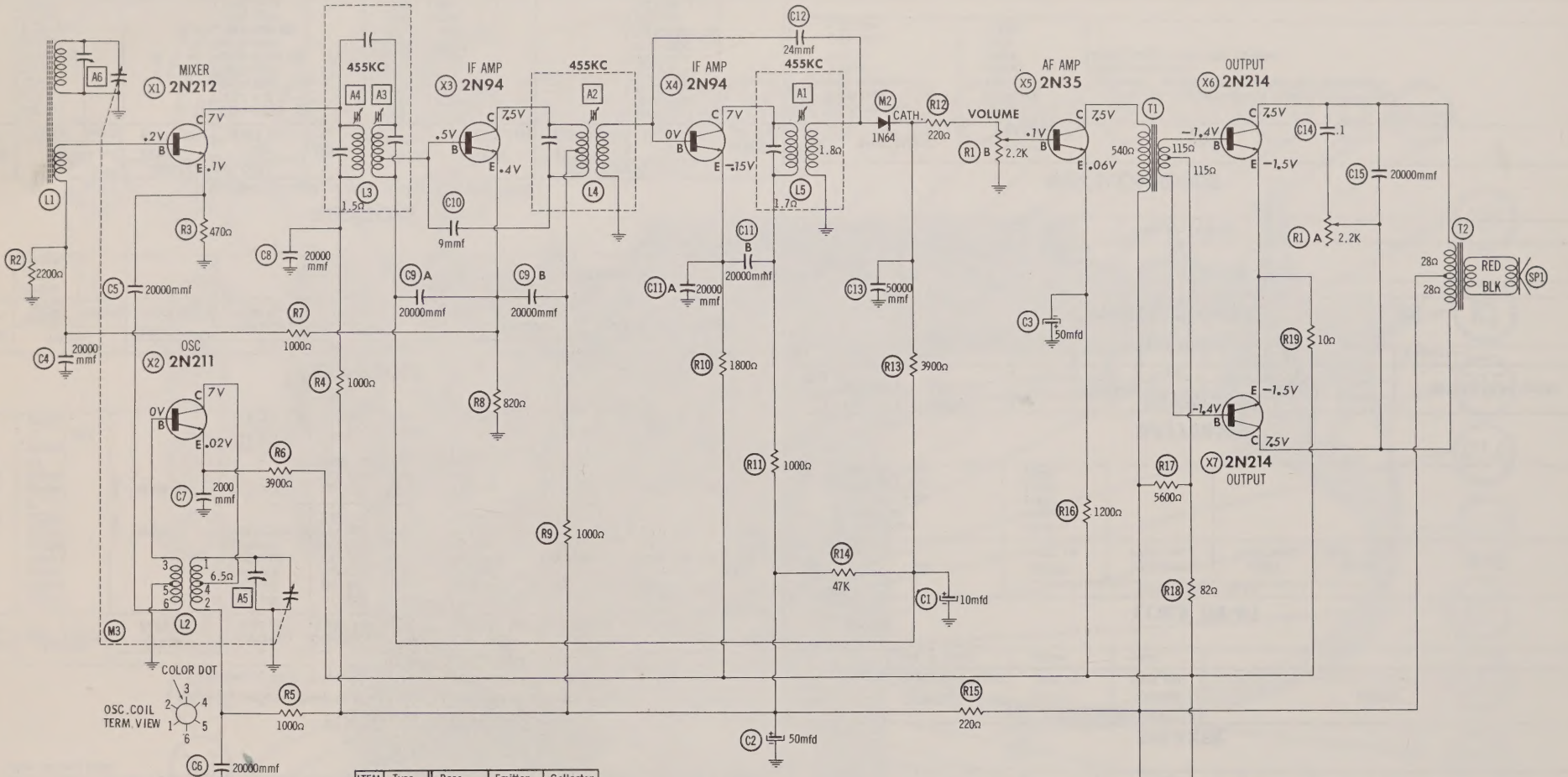
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		ARVIN PART No.	SYLVANIA PART No.	
M2	1N64		1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M3	Tuning Cap.	43989	2 Gang
	Cabinet	44035-88	British Tan. Includes Dial Crystal and Nameplate.
	Cabinet	44035-20	Alligator. Includes Dial Crystal and Nameplate.
	Knob	44054	Tuning and Tone
	Knob	44055	Dial Change & On-Off-Volume
	Pointer	44114	
	Handle	43696-1	

ARVIN MODEL 9562 (Ch. 1, 40900)



ITEM	Type	Base	Emitter	Collector
X1	2N212	900Ω 700Ω	260Ω 400Ω	†1000Ω
X2	2N211	.3Ω	900Ω 17K	†1000Ω
X3	2N94	4800Ω 1200Ω	500Ω	†1000Ω
X4	2N94	.7Ω	850Ω 15K	†1000Ω
X5	2N35	1900Ω 800Ω	1200Ω 13K	†540Ω
X6	2N214	1600Ω 14K	1300Ω 14K	†28Ω
X7	2N214	1600Ω 14K	1300Ω 14K	†28Ω

1. DC voltage measurements taken with vacuum tube voltmeter;
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

DUAL READINGS INDICATE A REVERSAL OF METER LEADS.
† MEASURED FROM JUNCTION OF R15 AND R17.

TUNING GANG FULLY CLOSED

DIAL CORD STRINGING

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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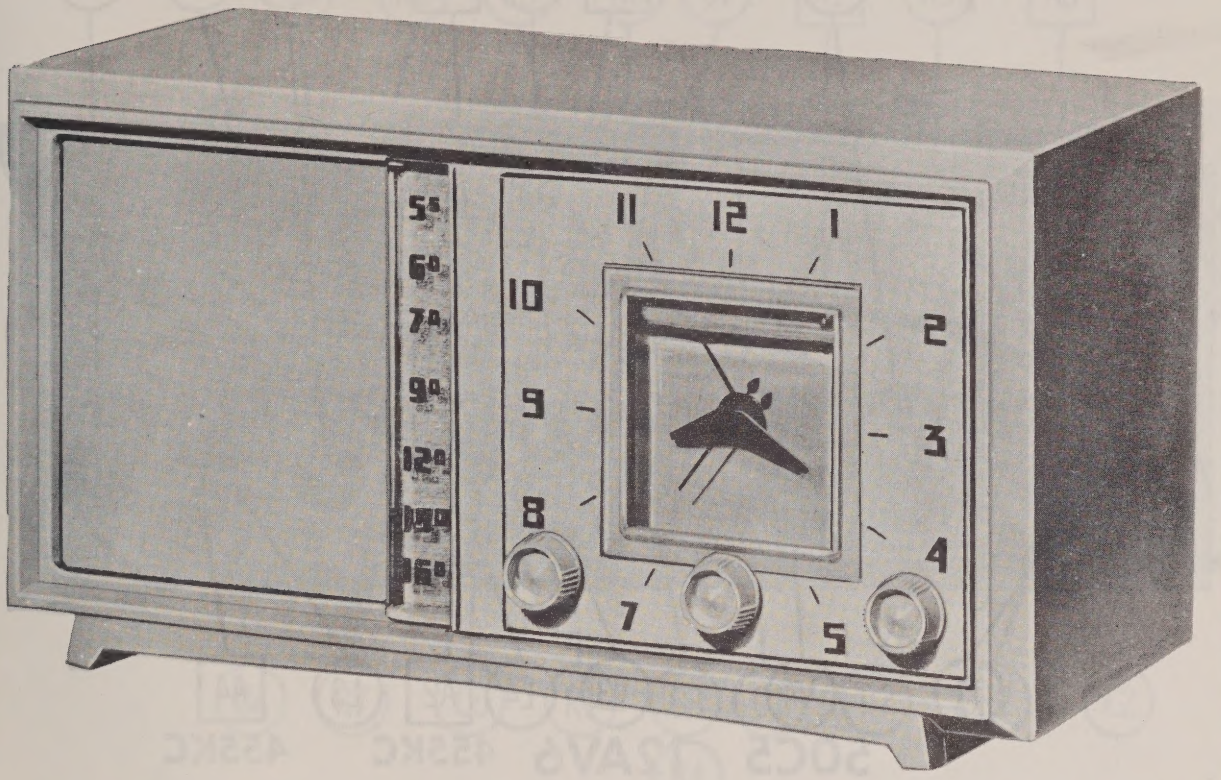
FIRESTONE
MODEL 4-A-154 (Code 382-6-374/2)

FIRESTONE
MODEL 4-A-154 (Code 382-6-374/2)



FIRESTONE
MODEL 4-A-154 (Code 382-6-374/2)

TRADE NAME	Firestone Model 4-A-154 (Code 382-6-374/2)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles — RATING .28 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC signal	"		Bend antenna rotor plates for maximum output. Repeat step 3.

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PARTS LIST AND DESCRIPTIONS

FIRESTONE MODEL 4-A-154

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amplifier	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	41972	PRS150V3050	BBRD5315	TCD497	TDLD-8	FMD-301	TVA-2450
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C3A	220									
B	2000									
C	5000		♦ 41696	♦PA-113-1	♦PC-150	♦116TM1	♦1408-01		♦DT-1	
D	250									
E										
C4	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C5	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C6	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C7	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	

♦ Items C3A, C3B, C3C, C3D, C3E, R4A, R4B and R4C are combined in one unit. When replacing items separately C3D and C3E should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1/2	41817	AB-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			AK-8	RS-2	NQ	DS-37	

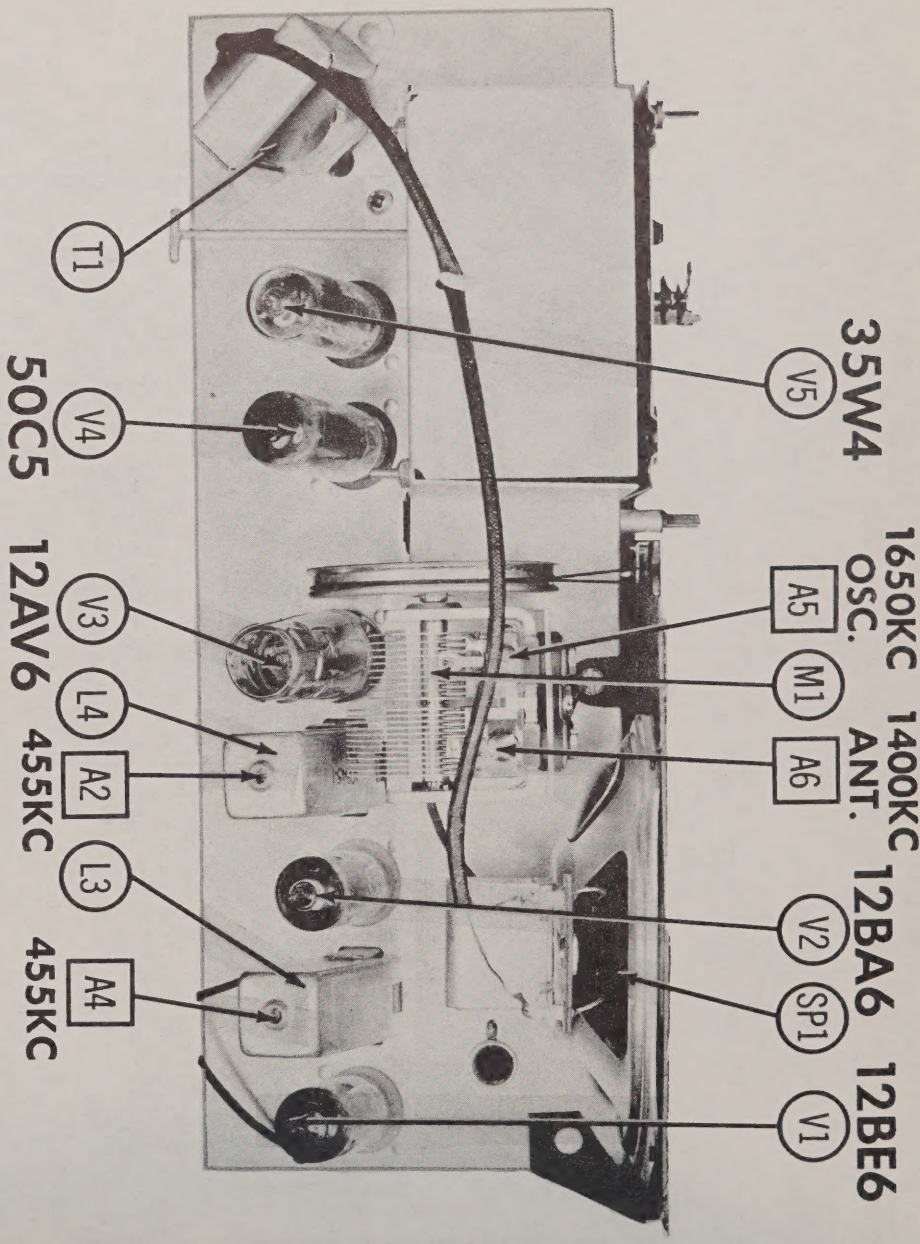
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FIRESTONE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	22K			BTS-22K	
R3	2.2Meg			BTS-2.2Meg	
R4A	6.8Meg			BTS-6.8Meg	
B	470K		♦41696	BTS-470K	
C	470K			BTS-470K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FIRESTONE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R5	120Ω			BTS-120	
R6	100K			BTS-100K	
R7	1200Ω	1		BTA-1200	
R8	330K			BTS-330K	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3.1Ω	42028-1	Z1101	A-3025	A-3332	24S50 ①	S-12X	① Drill new mounting hole.

SPEAKER

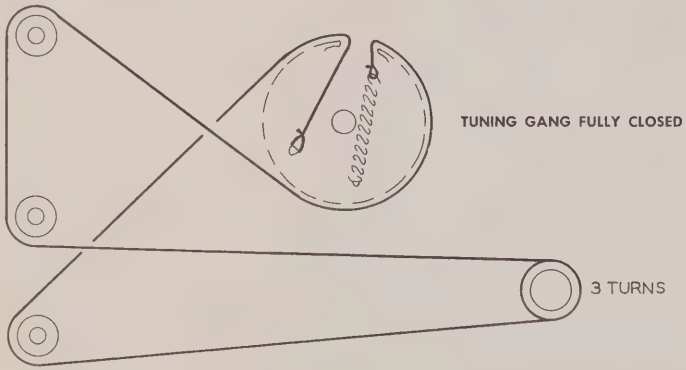
ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	FIRESTONE PART No.	QUAM PART No.	
SP1	4"	PM	3.1Ω	22875	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		FIRESTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Antenna	42036-2				Includes cabinet back
L2	Osc. Coil	41980-1	14-1073 *		69-OSC *	* Drill new mounting hole
L3	Input IF	43412-1	16-6758	BC-352	12-C1	
L4	Output IF	43412-1	16-6758	BC-353	12-C2	

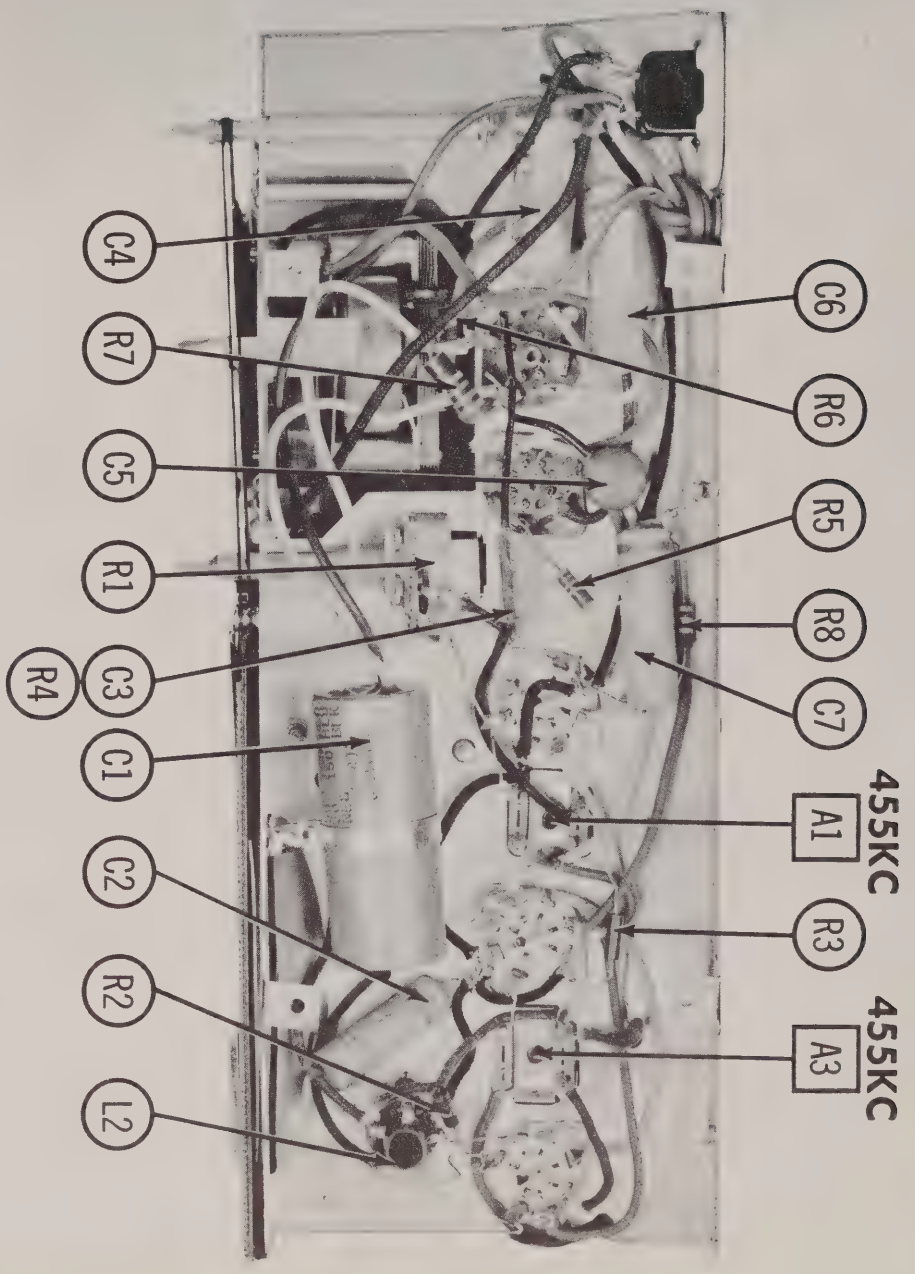
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M1	Tuning Cap.	41813	2 Gang (11-305MMF, 15-130MMF)
	Cabinet	44106-2	Ivory, includes radio and clock cyrstals
	Cabinet	44106-9	Willow green, includes radio and clock crystals
	Knob	41811-5	Clock
	Knob	41811-6	Volume & tuning
	Pointer	41812	
	Clock timer	43982-1	

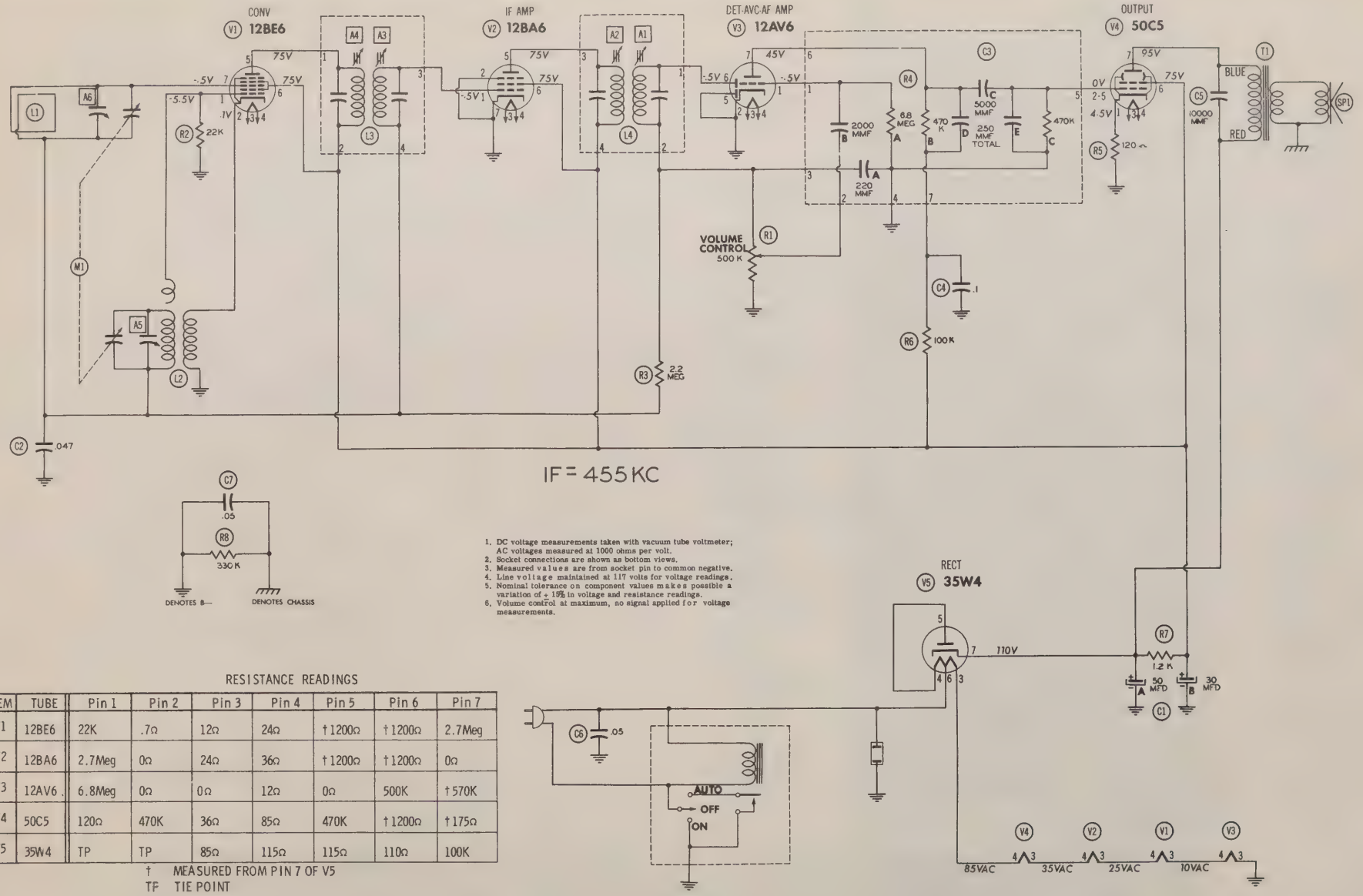


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



FIRESTONE MODEL 4-A-154



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.7Ω	12Ω	24Ω	†1200Ω	†1200Ω	2.7Meg
V2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†1200Ω	†1200Ω	0Ω
V3	12AV6	6.8Meg	0Ω	0Ω	12Ω	0Ω	500K	†570K
V4	50C5	120Ω	470K	36Ω	85Ω	470K	†1200Ω	†175Ω
V5	35W4	TP	TP	85Ω	115Ω	115Ω	110Ω	100K

† MEASURED FROM PIN 7 OF V5
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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HOTPOINT MODELS 21S401, 21S451, 21S452, 21S501, 21S502, 21S551, 21S552, 24S801, 24S802 ("U Line")

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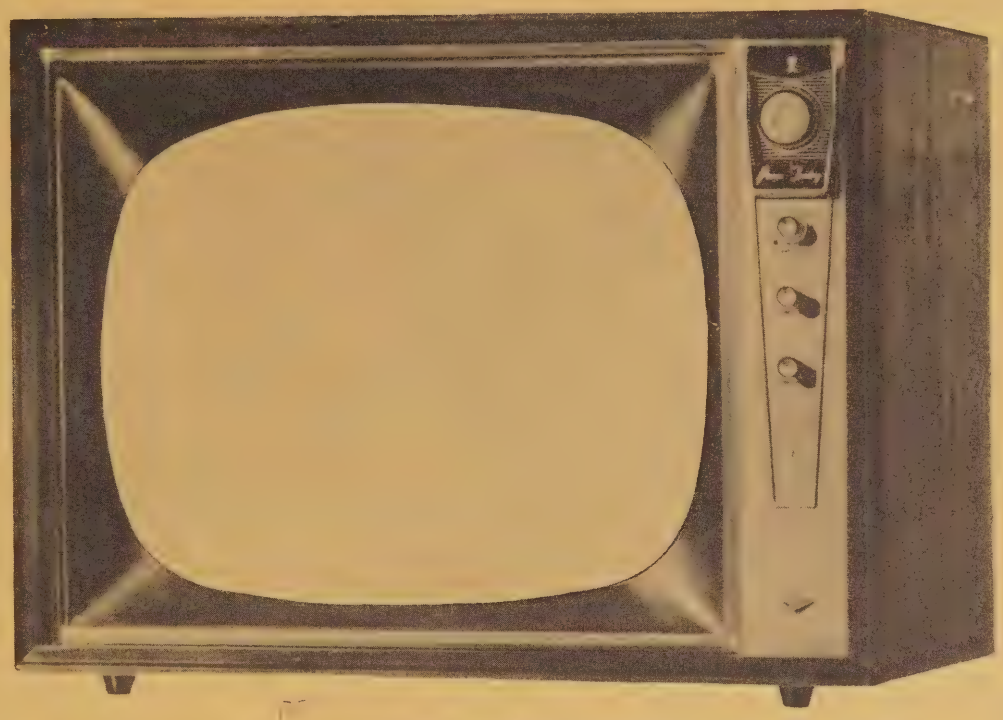

HOTPOINT MODELS 21S401, 21S451, 21S452, 21S501, 21S502, 21S551, 21S552, 24S801, 24S802 ("U Line")

HOTPOINT MODEL 21S451 ("U" LINE)

TRADE NAME	Hotpoint Models 21S401, 21S451, 21S452, 21S501, 21S502, 21S551, 21S552, 24S801, 24S802	"U" Line
MANUFACTURER	Hotpoint Co., 5600 W. Taylor St., Chicago 44, Ill.	
TYPE SET	Television Receiver	
TUBES	Seventeen	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 1.62 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

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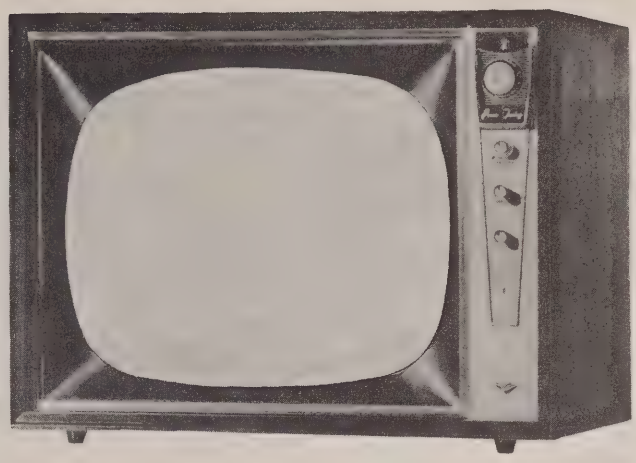
DISASSEMBLY INSTRUCTIONS

REMOVAL OF CHASSIS

1. Remove 6 push-on type knobs from front of cabinet.
2. Remove 8 metal screws. Remove rear cover.
3. Remove 4 metal screws holding corner bracket.
4. Remove 2 nuts holding picture tube strap to front of cabinet.
5. Remove 3 chassis bolts from bottom of cabinet.
6. Disconnect speaker plugs.
7. Remove chassis.
8. Remove 4 speaker nuts. Remove speaker.



MODEL

21S451 "U" Line

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove metal screws along bottom of cabinet front. Pull out bottom glass channel and glass. Use extreme caution when removing safety glass.

SERVICE ADJUSTMENT LOCATION

See tube location chart on page 16.

FOCUS ADJUSTMENT

Focus may be varied by means of a jumper on picture tube base. This jumper may be connected between pins 6 and 10 or 6 and 2. The ion trap should again be adjusted for maximum brightness consistent with best focus.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

It will be necessary to remove the rear cover and supply power to the set.

Set the horizontal hold control at its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L26)located on tube side of chassis.

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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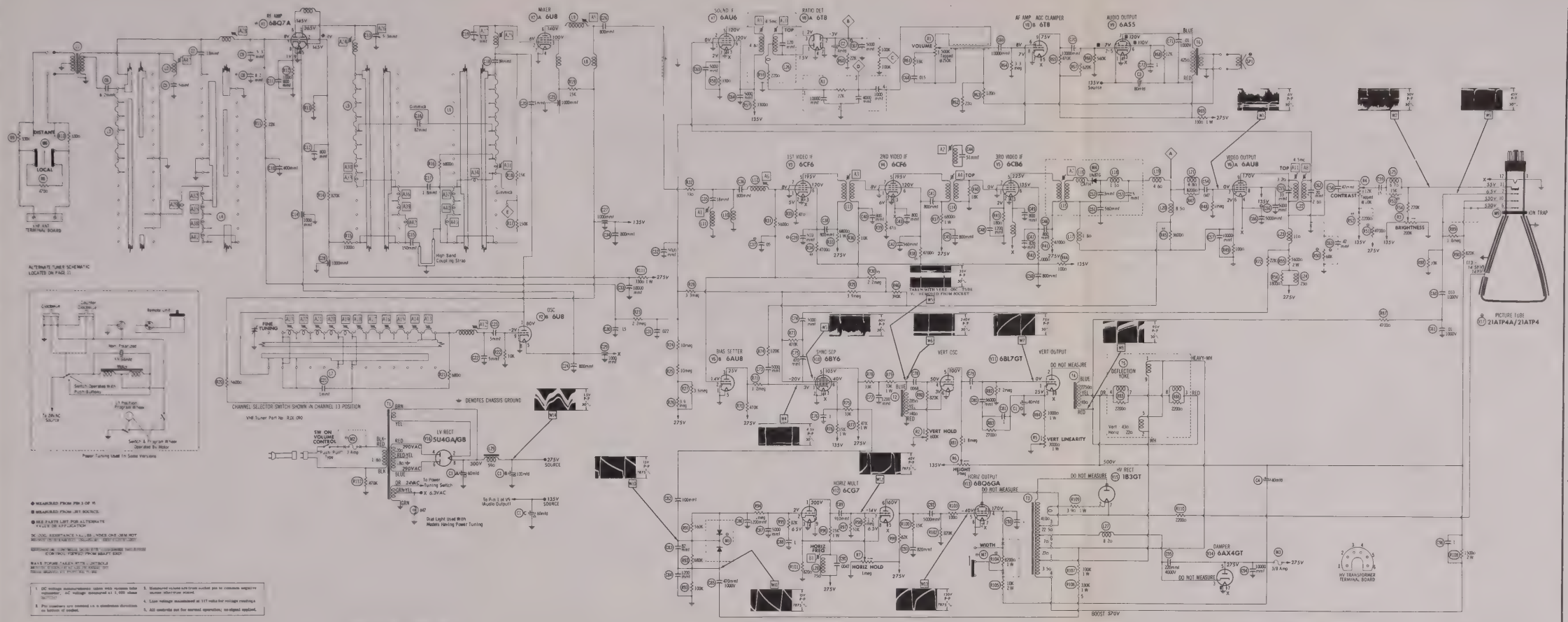
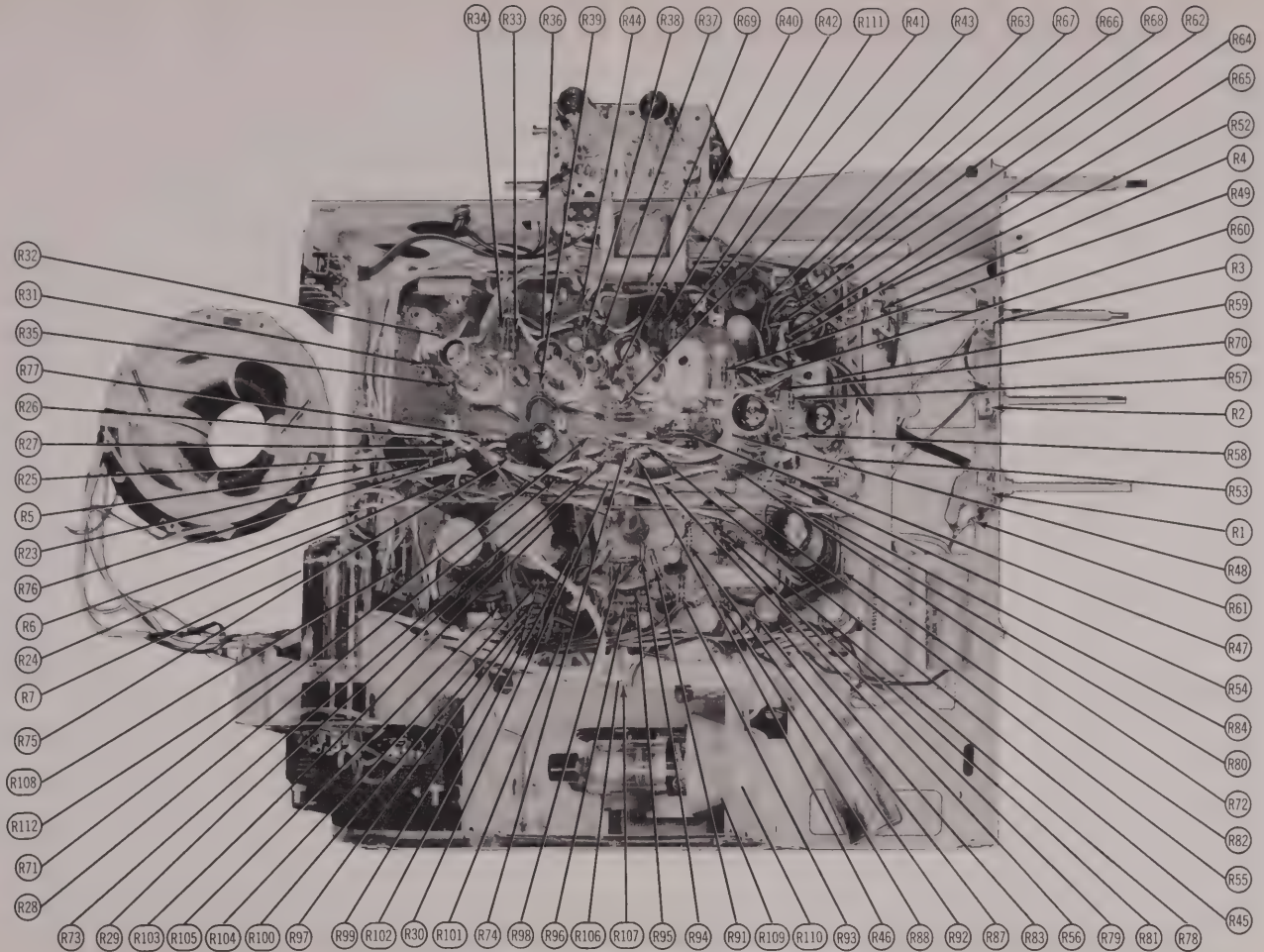
G742R

DATE 2-57 SET 348 FOLDER 3



HOTPOINT MODELS 21S401, 21S451, 21S452, 21S501, 21S502, 21S551, 21S552, 24S801, 24S802 ("U Line")

HOTPOINT MODELS 21S401, 21S451, 21S452, 21S501, 21S502, 21S551, 21S552, 24S801, 24S802 ("U Line")



CHASSIS TOP VIEW RESISTOR IDENTIFICATION

CHASSIS TOP VIEW

HOTPOINT MODELS 215401, 215451, 215452, 215501, 215502, 215551, 215552, 24S801, 24S802 ("U Line")

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal output tube (V12) from its socket. Do not remove the horizontal oscillator tube (V11) to disable the high voltage. Allow twenty minutes warm-up period for receiver and test equipment.

VIDEO IF ALIGNMENT

Set the Fine tuning control fully counter clockwise. Connect the negative lead of a 3 volt bias supply to the ungrounded side of C37, the positive lead to chassis. Set the contrast control fully clockwise. If during alignment two peaks occur, use the one with the slug farthest from the chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over converter tube (V1). Low side to chassis.	44MC (10MC Swp)	47.25MC	11	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A1, A3	Adjust for MINIMUM amplitude at marker.
2.	"	"	"	43.5MC	"	"	A3	Adjust to place marker at 50% on curve as in Fig. 1.
3.	"	"	"	45.75MC	"	"	A4	Adjust to place marker at 40% on curve as in Fig. 1.
4.	"	"	"	43.5MC 45.75MC	"	"	A5	Adjust A5 for width of peak region of response curve.
5.	"	"	"	"	"	"	A6, A7	Adjust for symmetry of curve. Recheck positions of markers and retouch if necessary.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If a signal generator providing a 4.5MC signal of crystal accuracy is not available, restore the receiver to normal operating condition and tune in a TV station. Connect VTVM and adjust A8, A9 and A10 as in steps 6 and 7.
Connect two matched 100K (a1%) resistors in series from point Ⓑ to chassis. The junction of these two resistors is alignment point Ⓔ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (unmod)	Any unused channel.	DC probe to point Ⓑ. Common to chassis.	A8, A9	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point Ⓒ. Common to point Ⓔ	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 130v sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any unused channel.	Vert. amp. to point Ⓑ. Low side to chassis.	A8, A9	Disconnect stabilizing capacitor (C2). Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
7.	"	"	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A10	Reconnect C2. Adjust A10 so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Turn the contrast control fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to point Ⓐ. Low side to chassis.	Not used.	4.5MC (400% Mod)	Any unused channel.	Vert. amp. thru detector network (Fig. 4) to pin 11 (cathode) of picture tube.	A11	Adjust for MINIMUM 400% indication on scope.

VHF OSCILLATOR ALIGNMENT

Connect the bias as under "Video IF Alignment". Set the fine tuning control two thirds from full counter clockwise position and leave it in this position during the entire oscillator alignment. Remove the 300 ohm transmission line from the tuner input terminals.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Fig. 5	Thru coupling network in Fig. 5 across primary of antenna input coil.	215MC (20MC Swp)	211.25MC	13	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A12	Adjust to place marker at 49% on response curve as in Fig. 6.
			205MC (20MC Swp)	205.25MC	12		A13	
			200MC (20MC Swp)	198.25MC	11		A14	
			195MC (20MC Swp)	193.25MC	10		A15	
			189MC (20MC Swp)	187.25MC	9		A16	
			183MC (20MC Swp)	181.25MC	8		A17	
			177MC (20MC Swp)	175.25MC	7		A18	
			83MC (10MC Swp)	83.25MC	6		A19	
			79MC (20MC Swp)	77.25MC	5		A20	
			69MC (20MC Swp)	67.25MC	4		A21	
			63MC (20MC Swp)	61.25MC	3		A22	
			57MC (20MC Swp)	55.25MC	2		A23	

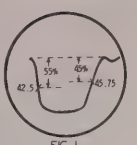


FIG. 1

FIG. 2

FIG. 3

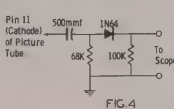
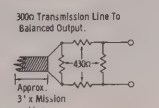
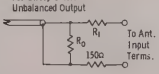


FIG. 4





Z_0	R_0	R_1
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω
92Ω	110Ω	100Ω

FIG. 5

VHF RF AND MIXER ALIGNMENT

Remove the 300 ohm transmission line from the tuner input terminals. If adjustments A32 through A43 require adjusting, (normally adjustments are not required), the tuner cover must be removed and replaced before and after each adjustment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Fig. 5	Thru coupling network (Fig. 5) across primary of antenna coil.	211MC (18MC Swp)	211.25MC 215.75MC	13	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A24, A25	Adjust for response of maximum amplitude and symmetry similar to Fig. 7. If tilt exceeds 10% it may be necessary to compress or expand coil turns of L5. Use insulated tool to prevent shorting B+.
11.	"	"	177MC (18MC Swp)	175.25MC 179.75MC	7	"	A26, A27, A28	Adjust for response curve similar to Fig. 7. A26 and A27 affect the bandwidth. Adjust A28 for maximum gain and MINIMUM tilt. If necessary, reposition L8 and L8 (coils whose adjustments are A30 and A31) to obtain desired response.
12.	"	"	207MC (05MC Swp)	205.25MC 209.75MC	12	"		Check each channel for response similar to Fig. 7. If not within limits of any high band channel, make compromise adjustments of A24 thru A28 with channel switch set to that channel. Recheck all other high band channels to see that they have not been seriously affected.
			201MC (05MC Swp)	199.25MC 203.75MC	11			
			195MC (05MC Swp)	193.25MC 197.75MC	10			
			189MC (05MC Swp)	187.25MC 191.75MC	9			
			183MC (05MC Swp)	181.25MC 185.75MC	8			
13.	"	"	85MC (05MC Swp)	83.25MC 87.75MC	6	"	A29, A30, A31	Adjust for maximum amplitude and flat topped response curve similar to Fig. 8.
14.	"	"	79MC (05MC Swp)	77.25MC 81.75MC	5	"	A32, A33, A34	Adjust for response similar to Fig. 8. If necessary, adjust by expanding or compressing coil turns to obtain response similar to Fig. 8.
15.	"	"	69MC (05MC Swp)	67.25MC 71.75MC	4	"	A35, A36, A37	"
16.	"	"	63MC (05MC Swp)	61.25MC 65.75MC	3	"	A38, A39, A40	"
17.	"	"	57MC (05MC Swp)	55.25MC 59.75MC	2	"	A41, A42, A43	"

UHF 40MC ALIGNMENT

Connect the negative lead of a 3 volt bias supply to the ungrounded side of C30. Connect positive to chassis.
Switch channel selector to UHF position. Disconnect IF output link from converter plate coil L6.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	Fig. 9	High side thru network (Fig. 9) to point Ⓓ. Low side to chassis.	820MC (20MC Swp)	40.5MC 45.75MC	Any UHF position.	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A44, A45 A46	Adjust for response similar to Fig. 10. Adjust A44 for maximum gain and correct position of 40.5MC marker. Adjust A45 for maximum gain and correct position of 45.75MC marker. Adjust A46 for maximum amplitude and MINIMUM tilt. Reconnect IF link.

VHF IF TRAP ALIGNMENT

The IF trap (A47) may be aligned by tuning in a station on which the interference occurs and adjusting A47 for MINIMUM interference in the picture. Be careful not to adjust A47 so that it attenuates at channel 2.
If the frequency of the interfering signal is known, the trap may be aligned as in step 18.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Fig. 5	Thru network in Fig. 5 across VHF Antenna terminals.	44MC (20MC Swp)	Set to freq. of interfering signal. Normally adjusted at 45.5MC	3	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A47	Connect bias as under "UHF 40MC Alignment". Adjust for MINIMUM marker amplitude. Remove bias and all test equipment. Replace V13 in its socket.

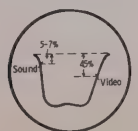


FIG. 6

FIG. 7

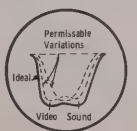


FIG. 8

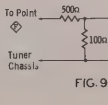
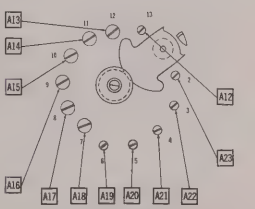


FIG. 9

FIG. 10

FIG. 11



OSCILLATOR ADJUSTMENTS

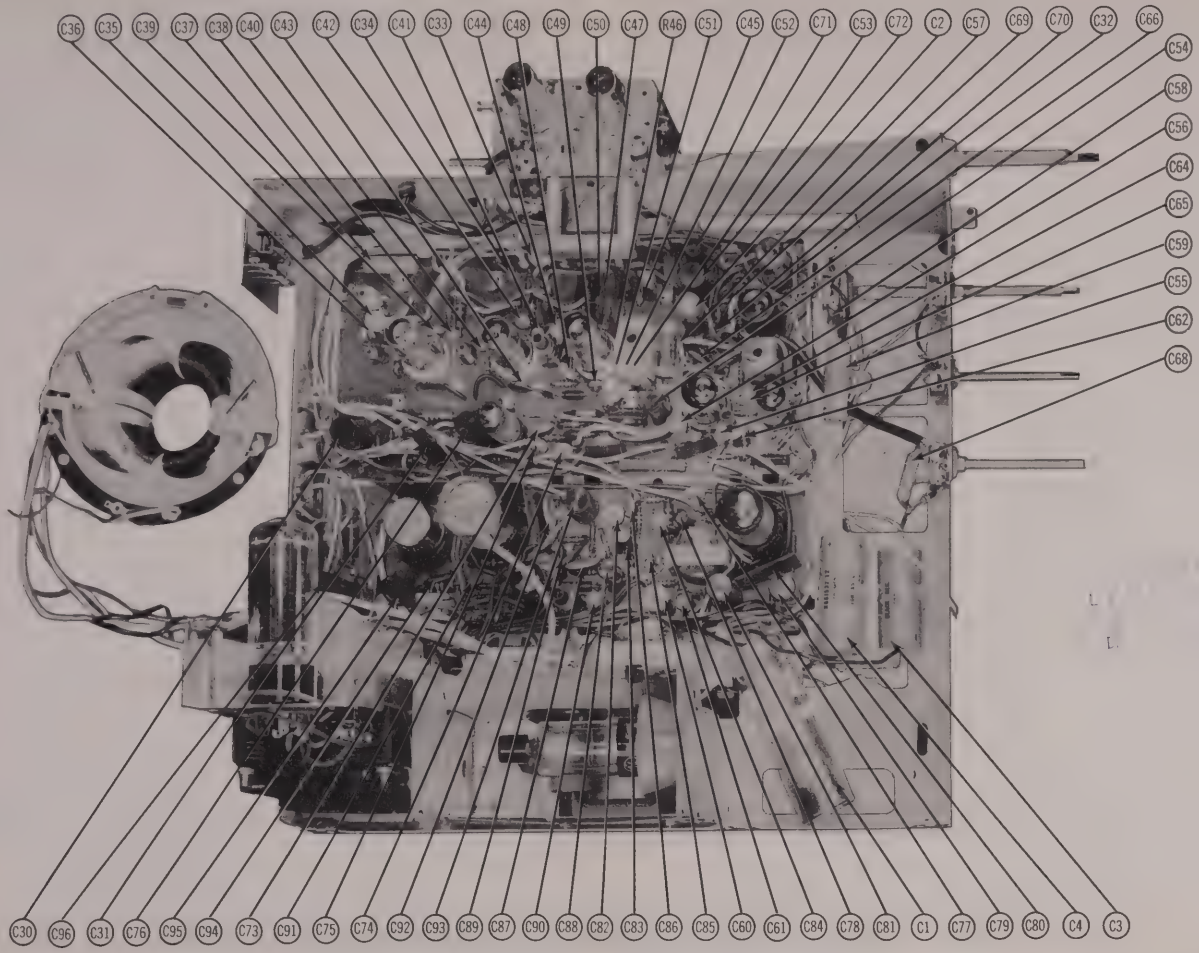
HOTPOINT MODELS 215401, 215451, 215452, 215501, 215502, 215531, 215552, 245801, 245802 ("U Line")

ALIGNMENT INSTRUCTIONS (cont)

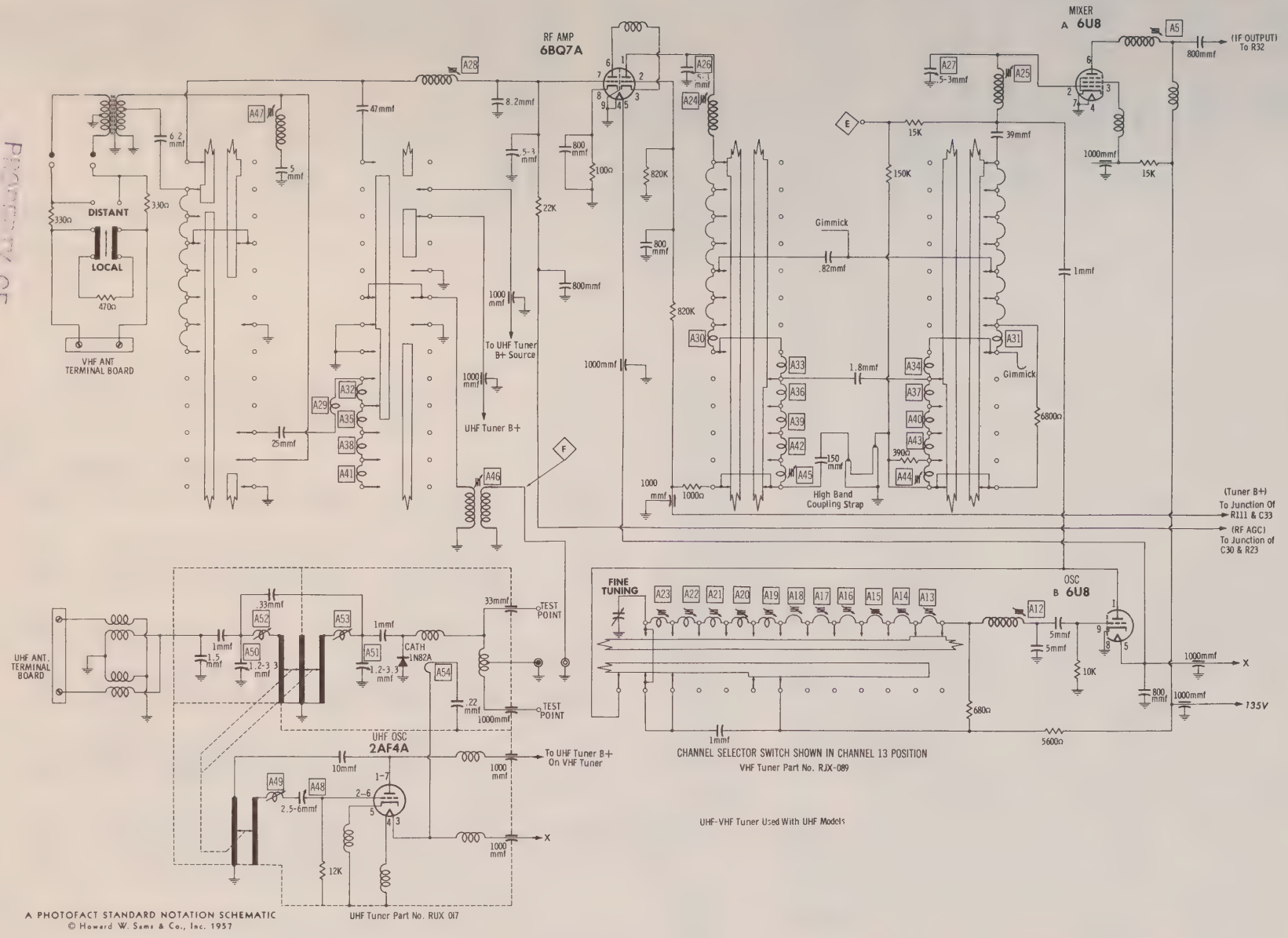
UHF TUNER ALIGNMENT

In some cases the tuner may be aligned without removing it from the chassis. In some sets however, adjustments are not accessible without removing the UHF tuner and extending the power leads (not the coax line) and grounding the UHF tuner chassis to main chassis. Set the VHF tuner to the UHF position. If a separate marker generator is used, loosely couple the marker generator lead to the sweep generator leads.
Connect the negative lead of a 3 volt bias supply to the ungrounded side of C30. Positive to chassis.
Preset A47 (IF interference trap) to 43. 5MC. This will cause a small notch in the response curve which will serve as the VHF marker during alignment. If necessary, after alignment of the UHF tuner reset A47 by repeating step 19.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20.	Fig. 5	Thru network in Fig. 5 across UHF antenna terminals.	460MC (15MC Swp)	460MC	Turn UHF tuner shaft fully counter clockwise.	Vert. amp. thru 10K to point (E). Low side to chassis.	A48	Adjust to place 460MC marker in notch in response curve created by A47. (Fig. 11)
21.	"	"	910MC (15MC Swp)	910MC	Turn UHF tuner shaft fully clockwise.	"	A49	Adjust to place 910MC marker in notch on response curve created by A47. Repeat steps 20 and 21 until marker and notch coincide at both ends of the band.
22.	"	"	530MC (15MC Swp)	530MC	Turn UHF tuner shaft until 530MC marker falls in notch.	See Remarks	A50, A51	Connect clip lead across the two test points on the UHF tuner. Disconnect the coaxial cable at the VHF tuner and connect a 33Ω resistor from the inner conductor to the outer conductor. Connect the input of an audio amplifier across the 33Ω resistor and feed the output of the amplifier to the input of the scope. The gain of the amplifier must be sufficient to produce a 2 inch deflection on the scope with .1 volts peak to peak at 60 cycles. Adjust for response similar to Fig. 11 with marker as shown. Remove short from test points. Remove amplifier and 33Ω resistor and reconnect coaxial cable to VHF tuner.
23.	"	"	880MC (15MC Swp)	880MC	Turn UHF tuner shaft until 880MC marker falls in notch.	Vert. amp. thru 10K to point (E). Low side to chassis.	A52, A53	Connect clip lead across the two test points on the UHF tuner. Disconnect the coaxial cable at the VHF tuner and connect a 33Ω resistor from the inner conductor to the outer conductor. Connect the input of an audio amplifier across the 33Ω resistor and feed the output of the amplifier to the input of the scope. The gain of the amplifier must be sufficient to produce a 2 inch deflection on the scope with a .1 volts peak to peak at 60 cycles. Adjust for response similar to Fig. 11 with marker as shown. Remove short from test points. Remove amplifier and 33Ω resistor and reconnect coaxial cable to VHF tuner. Repeat steps 21 thru 23 until symmetrical response is obtained at both 530MC and 880MC.
24.	"	"	See freq. chart.	See freq. chart.	UHF	"	A54	Sweep entire UHF band to observe response curve. Check for exceedingly low gain points within the tuning range. This is usually a result of insufficient oscillator injection and may be checked by measuring crystal current. Short the test points together with a clip lead but do not short to chassis; and connect a zero to five MA meter across the output coaxial cable. The limits under normal normal conditions are . 65MA and 3. 0MA. If the readings are below . 65MA or above 3. 0MA, adjust the position of the oscillator injection loop (A54) with respect to the crystal clip terminal.



CHASSIS TOP VIEW CAPACITOR IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTERNATE UHF-VHF TUNER SCHEMATIC

HOTPOINT MODELS 21501, 21502, 21551, 21552, 24501, 24502 ("U Line")

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amp.	6BQ7A	Note 1
V2	Mixer-Osc.	6U8	
V3	1st Video IF Amp.	6CF6	
V4	2nd Video IF Amp.	6CF6	
V5	3rd Video IF Amp.	6CB6	
V6	Video Output-Blue Gutter	6AU6	
V7	Sound IF Amp.	6AU6	
V8	Ratio Det-AF Amp.- AGC Clamper	6AL8	
		6T8	

Note 1. 6BA6 may be used in some versions.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	HOTPOINT PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V17	21AUP4A, 21AUP4	21AUP4A ① 21AUP4 ①		21AUP4A ③ 21AUP4 ③	① Aluminized ② Silver Screen "25"
	21AUP4A	21AUP4A ①		21AUP4A ③ 21AUP4 ③	
		21ALP4A, 21ALP4A/B ②		21ALP4A/B ③	
	21ALP4B ② 21ALP4			21ALP4A/B ③ 21ALP4	
	21BTP4A			21BTP4A ③ 21BTP4	
	24YP4	24YP4 ①		24YP4 ③	
	24DP4A	24DP4A ① 24QP4		24DP4A ③ 24QP4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP	VOLT	HOTPOINT PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	350	BCE-234	AFH4-80-G9		FPM3S-07		Q-186 T-500	R3256*
B	100	350							
C	60	300							
D	40	75							
C2	50	300	BCE-236	PRS150V4	BR350	TC30	TD-4-50	MMT-0505	TVA-1303
C3	80	200	BCE-233	PRS450V90	BR0535	TC90	TD-80-450	MT-4580	TVA-1716
C4	60	450	BCE-232	PRS480V40	BR4045	TC78	TD-40-450	FM-4540	TVA-1712

* Box catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	HOTPOINT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	5		RCW-3103	MP0-D15	TCZ-4R7	Z011	TCO-5	ZT-555	5TCCB-V47	
C6	6.2		RCW-3240			Z013				
C7	18		RCW-3284							
C8	8.2		RCW-3197	MP0-D18.2		Z018	TCO-8.2			
C9	5-3		RCY-080		820-3		31S-C	CT565A		
C10	900		RCW-3037	BPD-0008	DD-801	GD67	ED-000	UC-5375	5GA-T8	
C11	800		RCW-3037	BPD-0008	DD-801	GD67	ED-800	UC-5375	5GA-T8	
C12	800		RCW-3037	BPD-0008	DD-801	GD67	ED-800	UC-5375	5GA-T8	
C13	5-3		RCY-080		820-3		31S-D		CT565A	
C14	1000		RCW-3127	KF-001	MFT-1000				50SC-D1	
C15	150		RCW-3148							
C16	82									
C17	8									
C18	39		RCW-3199							
C19	5-3		RCY-080		820-3		31S-D	CT565A		
C20	1			MP0-E11	TCZ-1	TZ03	TCO-1		5TCCB-V1	
C21	5		RCW-3285							
C22	5		RCW-3283				TC3-4, 7			
C23	5									
C24	800		RCW-3037	BPD-0008	DD-801	GD67	ED-800	UC-5375	5GA-T8	
C25	1000		RCW-3127	KF-001	MFT-1000				50SC-D1	
C26	800		RCW-3037	BPD-0008	DD-801	GD67	ED-800	UC-5375	5GA-T8	
C27	1000		RCW-3127	KF-001	MFT-1000				50SC-D1	
C28	1000		RCW-3127	KF-001	MFT-1000				50SC-D1	
C29	1000		RCW-3127	KF-001	MFT-1000				50SC-D1	
C30	15	200							35S-P15	
C31	022	200						ACE612	35E-S22	
C32	5000		RCW-3014	BPD-005	DD-503	GD80	ED-005	DC525	5HK-D5	
C33	10000		RCW-3186	BPD-01	DD-103	GD83	ED-01	DC531	5HK-E1	
C34	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C35	18		RCG-018		TCZ-18	TZ23	TCO-18			
C36	900		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C37	.05	200		BPD-05	DF-503	CUB285		GEM-415	5TM-S5	Note 4
C38	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C39	910			EB1G		GG68	ED-91G	1TM-391	1TCA-391	Note 1
C40	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C41	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C42	580		RCW-3283	DI-00056	DD-561	GD63	ED-560	UC-5356	5GA-T56	
C43	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C44	51		RCW-3278	MP0-D150	TCZ-51	Z035	TCO-51	ZT-545	5TCC-Q5	
C45	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C46	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C47	820		RCW-3287	DI-0012	DD-821	GD67	ED-820	UC-5375	5GA-T8	
C48	1200		RCW-3187	DI-0012	DD-121	GD70	ED-1200		5GA-D12	
C49	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C50	800		RCW-3037	BPD-0008	DD-801	GD67	ED-0008	UC-5375	5GA-T8	
C51	560		RCW-3283	DI-00058	DD-561	GD63	ED-560	UC-5356	5GA-T56	
C52	3		RCW-3286	MP0-D03	TCZ-3R3	Z007	TCO-3	ZT-553	5TCCB-V33	
C53	5		RCW-3057	MP0-D15	TCZ-4R7	Z011	TCO-5	ZT-555	5TCCB-V47	
C54	.047	300						ACE641	5TCC-S47	
C55	33		RCW-3189	MP0-D33	TCZ-33	Z039	TCO-33	ZT-5433	5TCC-S3	
C56	5000		RCW-3014	BPD-005	DD-503	GD80	ED-005	DC525	5HK-D5	Note 2
C57	10000		RCW-3186	BPD-01	DD-103	GD83	ED-01	DC531	5HK-E1	
C58	47		RCW-3278	K047	D4-470	TP39	GP-47	UC-5447	5GA-Q47	
C59	15	400		P45BK-15		CUB4P15		GEM-405	4TM-P15	
C60	033	1000								
C61	01	1000								
C62	10		RCW-3173	MP0-D120	TCZ-20	Z033	TCO-20	ZT-542	5TCC-Q5	
C63	47		RCW-3239	BPD-000047	DD-470	KD80	ED-47	UC-5447	5GA-Q47	Note 3
C64	5000		RCW-3014	BPD-005	DD-502	KD80	ED-005	DC525	5HK-D5	
C65	5000		RCW-3014	BPD-005	DD-502	KD80	ED-005	DC525	5HK-D5	
C66	5000		RCW-3014	BPD-005	DD-502	KD80	ED-005	DC525	5HK-D5	
C67	5000		RCW-3014	BPD-005	DD-503	KD80	ED-005	DC525	5HK-D5	Note 3

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	HOTPOINT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C68	.015	200		BPD-015	DD16 153	CUB5S15	ED-015	GEM-415	4TM-S15	
C69	10000		RCW-3186	BPD-01	DD-103	KD83	ED-01	DC531	5HK-E1	
C70	10000		RCW-3186	BPD-01	DD-103	KD83	ED-01	DC531	5HK-E1	
C71	01	1000								
C72	1	400						ACE401	4SE-P1	
C73	5000		RCW-3014	BPD-005	DD-503	KD80	ED-005	DC525	5HK-D5	
C74	5000		RCW-3014	BPD-005	DD-503	KD80	ED-005	DC525	5HK-D5	
C75	470		RCW-3253	BPD-000047	DD-471	KD80	ED-470	UC-5247	5GA-T47	
C76	1	400						ACE401	4SE-P1	
C77	1200		RCW-3197	1464-0013		1RSD13	ED-1200		MS-212	
C78	.0068	800							6SE-D68	
C79	1	600						ACE601	6SE-P1	
C80	36000		RCW-3277							
C81	1	400						ACE401	4SE-P1	
C82	100		RCW-3234	MT50-DI100	TCM-100	MD42	TCT-100	MT-521	5TCU-T1	
C83	82		RCW-3233	1469-00008	D6-820	2240	ED-82		MS-482	
C84	1200		RCW-3187	1464-0013		1RSD13	ED-1200		MS-212	
C85	470	1000	RCW-3286	BYD-15-470	DD-471	VT47	HD18-470	DC30347	10GA-T47	
C86	1200		RCW-3187	1464-0013		1RSD13	ED-1200		MS-212	
C87	5000		RCW-3014	BPD-005	DD-5032	KD80	ED-005	DC525	5HK-D5	
C88	1	200						ACE401	2SE-P1	
C89	910	500	RCY-347	3468-00091		1RST91			MS-391	
C90	.0047	400						ACE6247	4SE-D47	
C91	820		RCW-3367	1464-00083		1RST83	ED-820		MS-383	
C92	5000		RCW-3186	DL-005	DD-5032	KD80	ED-005	DC525	5HK-D5	
C93	1	400						ACE401	4SE-P1	
C94	10000		RCW-3186	BPD-01	DD-103	KD83	ED-01	DC531	5HK-E1	
C95	220	6000	RCW-3375	BYD-80-220	DD80-221	VT2Z5	HD6-220	DC80322	50GA-T22	
C96	1	400						ACE401	4SE-P1	

Note 1: Some versions may use 680MMF in this application. (Part #RCW-3221).
Note 2: Some versions may use 10000MMF in this application. (Part #RCW-3186).
Note 3: Not used in some versions.
Note 4: Some versions may use .1MFD @ 200V in this application.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST ANCE	WATTS	HOTPOINT PART No	CENTRALAB Part No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	
R1A	500K	½	RRC-394				UT431	Volume Control Tap@ 350K
B	Shaft		Not Req.				TQ	Attach to R1A
C	Switch		Not Req.				DS-37	(Push-pull) Attach to R1A
R2A	500K	½	RRC-393				US-26	Vertical Hold
B	Shaft		Not Req.					Attach to R2A
R3A	200K	½	RRC-392					Brightness Control
B	Shaft		Not Req.					Attach to R3A
R4A	1K	½	RRC-390					Contrast Control Tap@ 10K- Note 1
B	Shaft		Not Req.					Attach to R4A
R5	5000Ω	1	RRC-305		39-5000			Vertical Linearity
R6A	3Meg	½	RRC-301	AB-94	A47-1Meg-S	Q11-160	8U-59	Height Control
B	Shaft		Not Req.	AS-1	FKS-1/4	Not Req.	TQ	Attach to R6A
R7A	1Meg	½	RRC-391	AB-89	A47-1Meg-S	Q11-157	TA6L	Horizontal Hold
B	Shaft		Not Req.	AK-4	K03-3	Not Req.	Not Req.	Attach to R7A

Note 1: Some versions may use alternate 15K, control part #RRC-396 or 17K with 15K stop, control part #RRC-422.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	HOTPOINT PART No.	IRC PART No.	
R8	470Ω			BTS-470	
R9	330Ω			BTS-330	
R10	330Ω			BTS-330	
R11	22K			BTS-22K	
R12	100Ω			BTS-100	
R13	820K			BTS-820K	
R14	820K			BTS-820K	
R15	1000Ω			BTS-1000	
R16	6800Ω			BTS-6800	
R17	150K			BTS-150K	
R18	15K			BTS-15K	
R19	15K			BTS-15K	
R20	5800Ω			BTS-5800	
R21	680Ω			BTS-680	
R22	10K			BTS-10K	
R23	2.2Meg				
R24	10Meg 5%				
R25	10Meg 5%				
R26	3.9Meg				
R27	3.9Meg				
R28	3.3Meg				
	1Meg	5%			
R29	3.9Meg				
R30	2.2Meg				
R31	5600Ω				
R32	33Ω				
R33	6800Ω	1		BTA-6800	
R34	4700Ω			BTA-4700	Note 1
R35	47Ω			BTS-47	
R36	10K			BTS-10K	
R37	6800Ω	1		BTA-6800	
R38	4700Ω			BTA-4700	Note 1
R39	47Ω			BTS-47	
R40	18K				
R41	4700Ω			BTS-4700	
R42	10000			BTS-1000	
R43	1800Ω			BTS-180	
R44	100Ω			BTS-100	
R45	39000 5%			BTS-3900 5%	Note 2
R46	390K			BTS-390K	
R47	8200Ω			BTS-8200	
R48	1Meg			BTS-1Meg	
R49	100Ω			BTS-100	
R50	68K			BTS-68K	Note 3
R51	4700Ω			BTS-4700	Note 3
R52	22000			BTS-2200	Note 3
R53	15K			BTS-15K	Note 4
R54	330K			BTS-330K	
R55	5600Ω	2		BTA-5600	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	HOTPOINT PART No.	IRC PART No.	
R56	18000			BTS-1800	
R57	3300Ω			BTS-3300	
R58	330Ω			BTS-330	
R59	220Ω			BTS-220	
R60	22K			BTS-22K	
R61	33K			BTS-33K	
R62	22Ω			BTS-22	
R63	120Ω			BTS-120	
R64	3.3Meg			BTS-3.3Meg	
R65	470K			BTS-470K	
R66	560K 5%			BTS-560K 5%	
R67	620K 5%			BTS-620K 5%	
R68	12K			BTS-12K	
R69	330Ω	1		BTA-330	
R70	470K			BTS-470K	
R71	1.3Meg			BTS-1.3Meg	
R72	22K			BTS-22K	
R73	470K			BTS-470K	
R74	120K			BTS-120K	
R75	33K			BTS-33K	
R76	15K	1		BTA-15K	
R77	47K	1		BTA-47K	
R78	33K			BTS-33K	
R79	33K	1		BTA-33K	
R80	820K			BTS-820K	
R81	1.8Meg			BTS-1.8Meg	
R82	2.2Meg			BTS-2.2Meg	
R83	2700Ω			BTS-2700	
R84	100Ω	1		BTA-1000	
R85	2200Ω				
R86	2200Ω				
R87	4700Ω			BTS-4700	
R88	33K			BTS-33K	
R89	1.8Meg			BTS-1.8Meg	
R90	620K			BTS-620K	
R91	560K 5%				
R92	680K				
R93	100K				
R94	1Meg				
R95	82K				
R96	15K	1			
R97	51K 5%				
R98	1.3Meg				
R99	82K				
R100	15K				
R101	8200 5%				
R102	820K				
R103	1000				
R104	8200Ω	1		BTA-8200	Note 3

RESISTORS (cont)

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	HOTPOINT PART No.	IRC PART No.	
R105	10K	2		BTB-10K	
R106	330K	1			
R107	330K	1			
R108	1500Ω	3		BTW-1500	
R109	3.9Ω	1		BRE-3R9	
R110	2200Ω			BTB-2200	
R111	330Ω	1		BTA-330	
R112	470K			BTS-470K	

Note 1: A 1000Ω resistor used in some versions.
Note 2: A 3300Ω resistor used in some versions.
Note 3: Not used in some versions.
Note 4: A 68K resistor used in some versions.
Note 5: A 100K resistor used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	HOTPOINT PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Tried PART No
T1	117VAC	580VCT	6V	24V	RTL-300					
	1.62A	230A	3A	Taps@8.5V @ 0.4A						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		HOTPOINT PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T2	Vert. Osc. Trans.	RTO-192	B6709 ①	A-3004 ②		A-6126 ①	26A02 ②	A-1302 ②	
T3	Horiz. Output Trans.	RTO-190				X135*	RO-254		
T4	Vert. Output Trans.	RTO-193	21801 ①	A-2824 ②		V315 ①	A-8141 ②	26S54 ②	A-1093K ②
T5A	Yoke(90°) Horiz(10.5MH)	RLD-071	DY808 ①	MDF-91 ②	237D1 ①	T90F12/47 ①	DY-13A ②	Y-14.8 ①	Y-40-1 ②
B	Vert(33MH)	RLD-078 ①	②	②	②	②	②	②	②

① Connect red and yellow leads to cathode. Connect blue lead to ground. Connect green lead to grid capacitor C78.
② Bend down tabs to duplicate original mounting.
③ Cut and tape blanking winding lead.
④ Drill new mounting hole(s).
⑤ Connect as auto trans.
⑥ Requires new clamping device.
⑦ Connect horiz. yoke term #3 to horiz. output trans. term #2; connect horiz. yoke term #1 to horiz. output trans. term. #1.
⑧ Connect horiz. yoke damping network across terms. #3 and #7.
⑨ Alternate part used in some versions.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Tried Replacement Connections
3				3	3		
6				6	6		
2				2	1		
1				1	1		
4				4	4		
Special Notes				⑫	⑫		

⑫ If necessary to remove drive lines, add approx. 100MMF @ 6KV in parallel with capacitor C95.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HOTPOINT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	
T6	5.2K	3-4Ω	RTO-194	21107 ①	A-3018	A-3877 ②	26S49	S-23 ①	① Drill out new mtg. hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HOTPOINT PART No	QUAM PART No.	
SP1	4"	PM	3-4Ω	HOP-035 ①	4A0T	① 21S401, 21S451, 21S452
	6"	PM		S-625DT ②		② 21S501, 21S502
	8"	PM		S-825DT ③		③ 21S551, 21S553, 24S801, 24S803

COILS (RF-IF)

ITEM No.	USE	HOTPOINT PART No.	NOTES
L1	Ant. Trans.	RLA-065	Includes Channels 6-13
L2	OF Trap	RLI-368	
L3	Ant. Coils	RSX-076	Includes C6, L1 Channels 6-13
L4	Ant. Coils	RSX-078	Includes C10, RLI Channels 2-5
L5	RF Coils	RSX-074	Includes C13, RL5

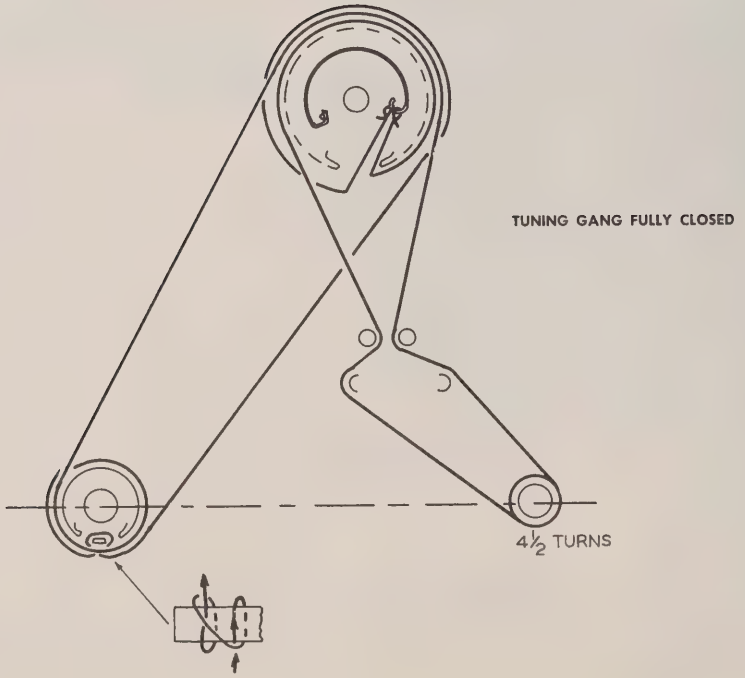
ITEM No.	USE	HOTPOINT PART No.	NOTES
L6	Mixer Grid Coils	RSX-072	Includes C16, C17, C18, C31, R17, R18. Includes C20, R20, R21
L7	Osc. Coils	RSX-072	
L8	RF Choke	RLI-390	
L9	Conv. Plate	RLI-389	

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DC RES. PRI	DC RES. SEC.	HOTPOINT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L10	RF Choke	0Ω		RLI-384				.1 Microhenry
L11	47.25MC Trap	0Ω		RLI-364				Core part #RE1-068
L12	1st Video IF	0Ω		RLI-361				
L13	2nd Video IF	0Ω	0Ω	RTL-189				Core part #RE1-065
L14	3rd Video IF	.1Ω	.1Ω	RTL-189				Includes 47.25MC trap; Top core part #RE1-065 Bot. core part #RE1-068 Core part #RE1-065
L15	4th Video IF	.1Ω	.1Ω	RLI-385				
L16	Series Peaking Coil	0Ω		RLI-301				.22 Microhenry
L17	RF Choke	1.8Ω		RLI-365	19-1002		4608	2.2 Microhenries; IRC part #CL4
EH1	Series Peaking Coil	1.1Ω						6.6 Microhenries
EH2	Series Peaking Coil	4.6Ω		RLI-340	19-1004		4610	5.8 Microhenries; IRC part #CL4

RESISTANCE MEASUREMENTS

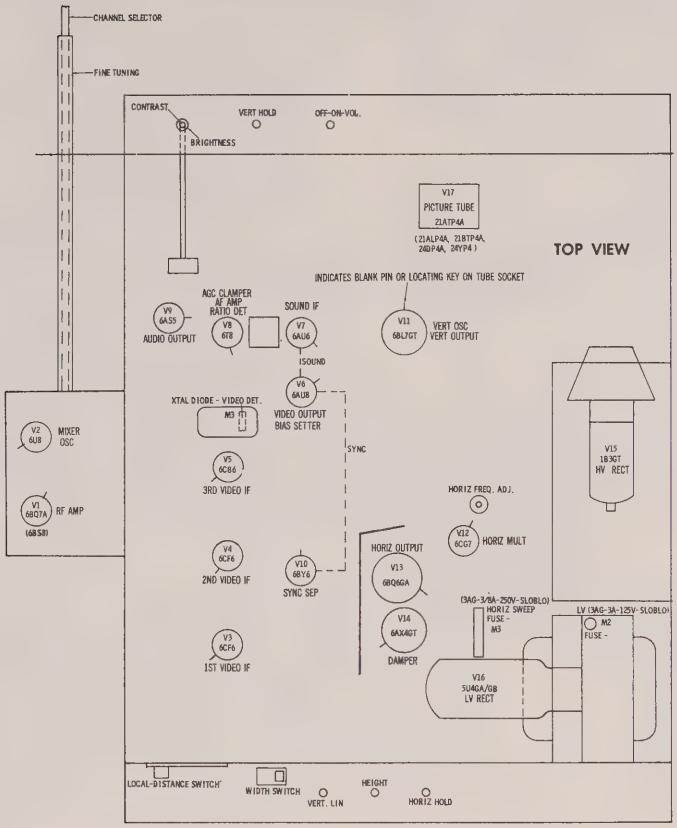
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	†1400Ω	400K	INF	0Ω	.1Ω	INF	8Meg	100Ω	0Ω
V2	6U8	■5600Ω	165K	■ 15K	0Ω	.1Ω	■ 0Ω	0Ω	0Ω	10K
V3	6CF6	2.5Meg	47Ω	.1Ω	0Ω	†6800Ω	■ 4800Ω	0Ω		
V4	6CF6	2.5Meg	47Ω	.1Ω	0Ω	†6800Ω	■ 4800Ω	0Ω		
V5	6CB6	.1Ω	180Ω	.1Ω	0Ω	†4700Ω	■ 1100Ω	0Ω		
V6	6AU8	0Ω	2.5Meg	†470K	.1Ω	0Ω	100Ω	1Meg	■ 0Ω	†5000Ω
V7	6AU6	2.6Ω	0Ω	.1Ω	0Ω	■ 3300Ω	■ 3300Ω	330Ω		
V8	6T8	INF	22K	INF	0Ω	.1Ω	5Meg	0Ω	3.3Meg	†470K
V9	6AS5	40K	300K	.1Ω	0Ω	300K	†12K	†810Ω		
V10	6BY6	†1.5Meg	0Ω	.1Ω	0Ω	†22K	■12K	3.3Meg		
V11	6BL7GT	2.2Meg	*4200Ω	●1200Ω	●1Meg	●■ 2.5Meg	140Ω	0Ω	.1Ω	
V12	6CG7	†15K	1.5Meg	820Ω	0Ω	.1Ω	†82K	51K	820Ω	0Ω
V13	6BQ6GA	NC	0Ω	NC	†18K	820K	NC	.1Ω	0Ω	TOP CAP *31Ω
V14	6AX4GT	NC	TP	INF	NC	†59Ω	NC	.1Ω	0Ω	
V15	1B3GT	PINS 1 - 8 HAVE INFINITE RESISTANCE								TOP CAP *441Ω
V16	5U4GA/GB	TP	45K	NC	19Ω	NC	18Ω	NC	45K	
V17	21ATP4A	0Ω	33K	Pin 6 820K	Pin 10 820K	Pin 11 ●■250K	Pin 12 .1Ω			

† MEASURED FROM PIN 8 OF V16.
■ MEASURED FROM 135V LINE.
* MEASURED FROM PIN 3 OF V14.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
NC NO CONNECTION
TP TIE POINT



UHF DRIVE CORD STRINGING

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V9, V16, Fuse (M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V9, Diode (M4)
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V17
Has pic, no sound - V7, V8, V9
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V11
No horiz. sync - Diode (M1), V12
No vert. or horiz. sync - V6, V9, V10

SWEEP FAILURE
No raster, has sound - V12, V13, V14, V15, V17, Fuse (M3)
No vertical deflection - V11
Poor vert. linearity or foldover - V11
Poor horiz. linearity or foldover - V12, V13, V14
Narrow picture - V12, V13, V14, V16
Vert. off freq. - V11
Horiz. off freq. - M1, V12

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	HOTPOINT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L20	Shunt Peaking Coil	8.5Ω		RLI-209	19-3250	TV-185	6130	270 Microhenries
L21	Series Peaking Coil	4.8Ω		RLI-382	19-3100		6112	110 Microhenries
L22A	4.5MC Trap	3.2Ω		RLI-363				
B	Sound IF	2.6Ω						Core part #REI-067
L23	Shunt Peaking Coil	11Ω		RLI-345	19-4400	TV-190	6134	390 Microhenries
L24	Shunt Peaking Coil	23Ω		RLI-386				1500 Microhenries
L25	Series Peaking Coil	6.7Ω		RLI-383	19-4201	TV-184	6154	200 Microhenries
L26	Ratio Det.	4.8Ω	1.2ΩCT	RTD-026				Tertiary winding = .6Ω; Core part #REI-065
L27	RF Choke	8.2Ω		RLI-153	19-1005		4612	10 Microhenries; IRC part #CL-1.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HOTPOINT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L28	75Ω		RLI-365							

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	HOTPOINT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L29	.230A	59Ω	1.13HY	RLF-075	C5040	C-2994	C-2327	26C41	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOTPOINT PART No.	REPLACEMENT DATA	
K1	De-emphasis	22K, 1000MMF, 4000MMF, 10000MMF	REK-012	Aerovox Centralab Sprague	PA425 PC-186 PB-3

SELENIUM DIODE

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	HOTPOINT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1		RER-023 ②		1T1 ①				① 2 required ② Some versions may use 2 germanium diodes part # RED-006 in this application and manufacturer recommends this No. for replacement

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			HOTPOINT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG S/B	3A 125V	REF-028 ①	RJB-077 ①	313003. (3AG-S/B-3A)	357001	MDX3	4405
M3	3AG P/T S/B	3/8A	REF-016		315.375 (3AG-P/T-S/B-3/8A)		MDV 3/8	

① Not used in some versions.

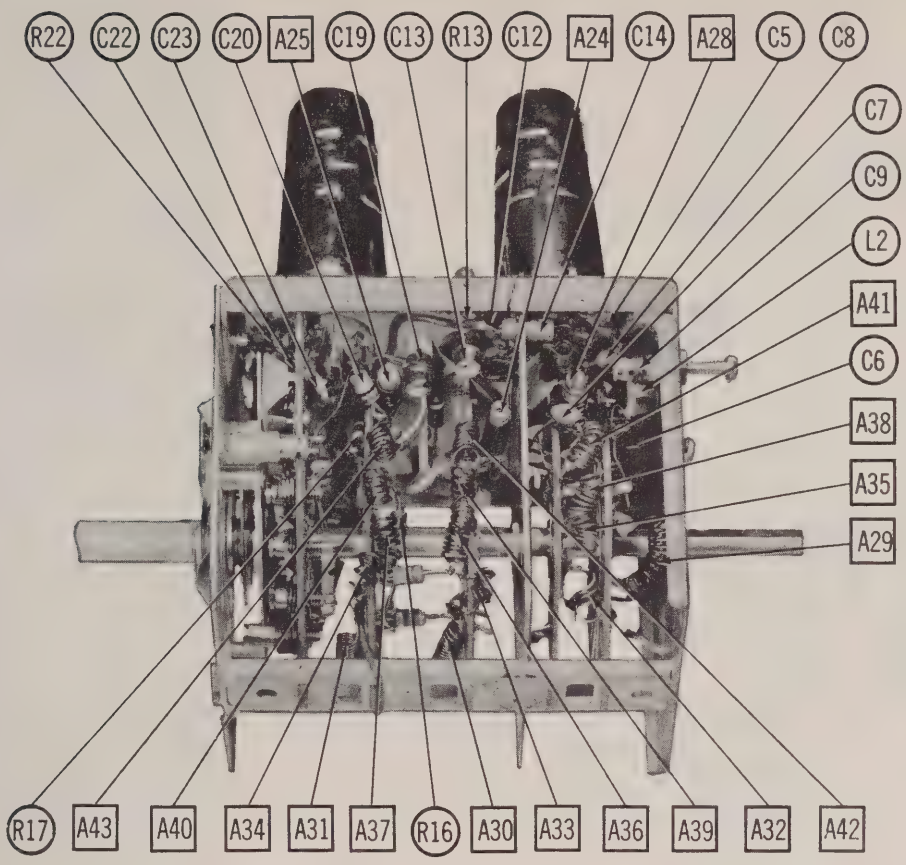
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		HOTPOINT PART No.	SYLVANIA PART No.	
M4	1N87G	RED-001	1N60	Video Detector (Pigtail)

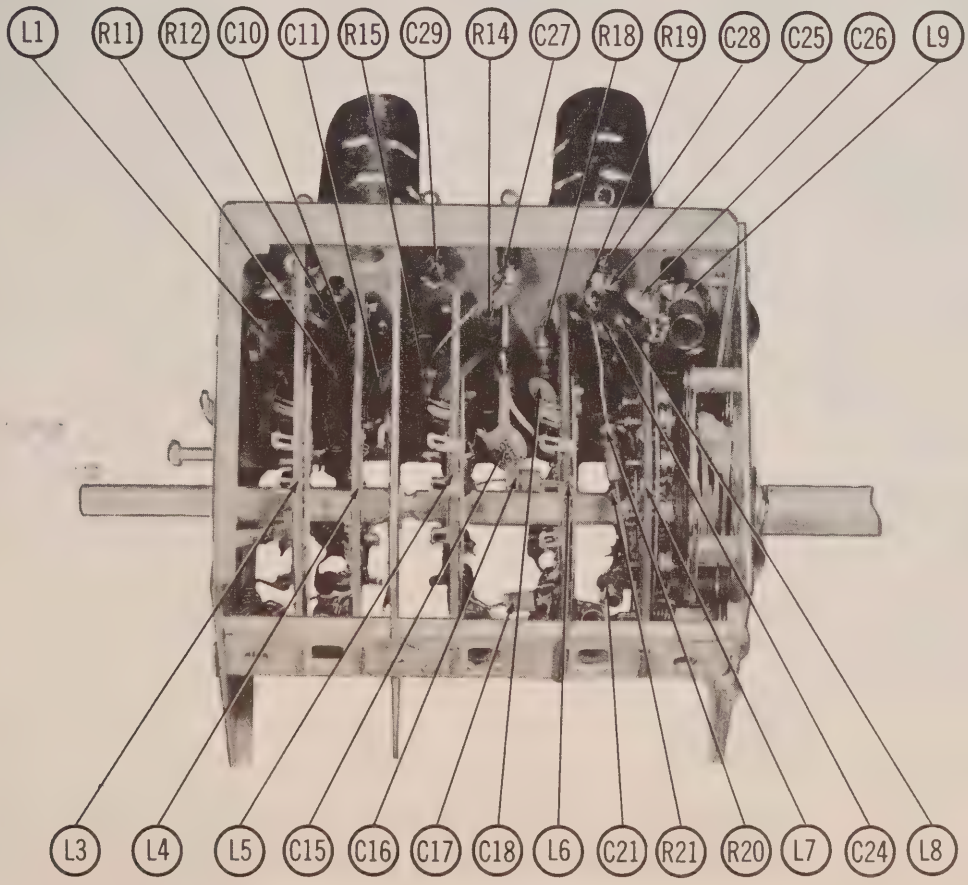
MISCELLANEOUS

ITEM No.	PART NAME	HOTPOINT PART No.	NOTES
M5	Tuner	RJX-090	VHF (12 Position). Used in VHF models.
	Tuner	RJX-089	VHF (13 Position). Used in UHF-VHF models.
	Tuner	RUX-017	UHF. Used in UHF-VHF models.
M6	Switch	RSS-011	Local-Distant (DPDT) Slide Type.
M7	Switch	RSS-013	Width (SPST) Slide Type. (Note 1)
M8	Centering Device	REA-013	
M9	Ion Trap	RET-013	
	Retainer Ring	RHH-012	Yoke
	Glass	RDW-117	Model 21S401.
	Glass	RDW-118	Models 21S451, 21S452, 21S501, 21S502, 21S551, 21S552.
	Glass	RDW-120	Models 24S801, 24S802.
	Mask	RDM-076	Models 21S401, 21S451, 21S452, 21S501, 21S502, 21S551, 21S552.
	Mask	HDM-001	Models 24S801, 24S802.

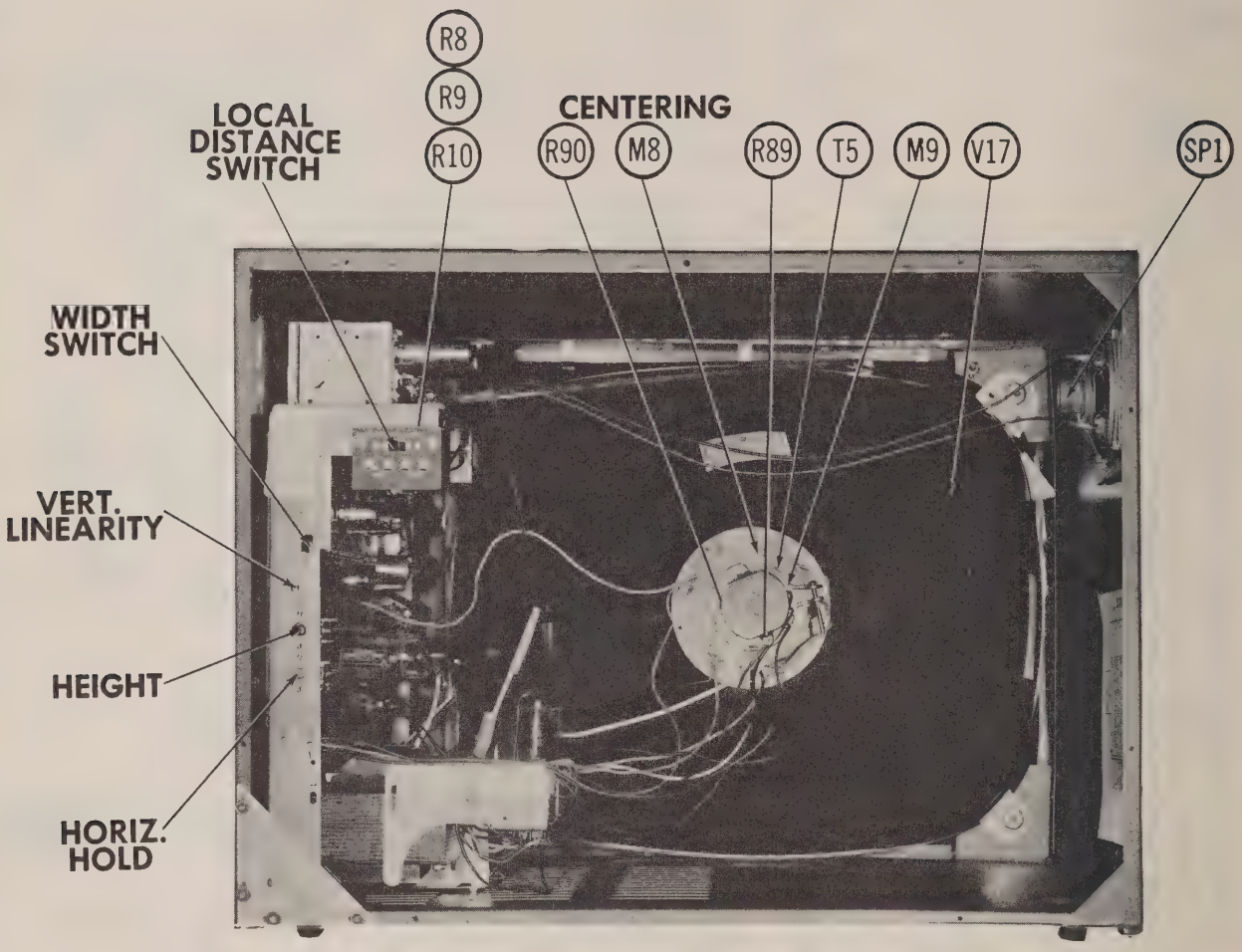
Note 1: Not used in some versions.



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a clip lead from the ungrounded side of C86 to chassis. Shunt the horizontal frequency coil L28 with a 1000Ω resistor.

Adjust the horizontal hold control (R7) so that the picture floats back and forth across thru sync position.

Remove the 1000Ω resistor from across L28. Adjust horizontal frequency slug (B1) so that the picture again floats back and forth across sync position.

Remove the short from C86.

LECTROLAB
MODEL R-500

LECTROLAB
MODEL R-500

TRADE NAME	Lectrolab Model R-500
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago 9, Ill.
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES (Five)	Types 12AY7 Preamplifier, 12AY7 AF Amp.-Phase Inv., (2) 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC - 50/60 Cycles RATING .53 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AY7	
V2	AF Amp. -Phase Inv.	12AY7	
V3	Output	6V6GT	
V4	Output	6V6GT	
V5	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	LECTROLAB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■20	450		AFH3-35	CO260	FP376. 3	[TMT32 TD-10-450	T-135	TVL-3779
B	▲10	450							
C	10	450							
C2	8	300		PRS350V8	BR835	TC61	TD-8-350	FM-3508	TVA-1603

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	LECTROLAB PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.004	400		BPD-004	D6-402	CUB6D4	GP2-333-402	PT624	6TM-D4	
C4	.004	400		BPD-004	D6-402	CUB6D4	GP2-333-402	PT624	6TM-D4	
C5	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C6	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C7	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C8	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C9	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C10	.022	400		BPD-02	DD-203	CUB4S22	817-02	PT4122	4TM-S22	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	LECTROLAB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	1/2	BA211-1274	AB-60	A47-500K-Z	Q13-133	U48	Volume #1
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R2A	500K	1/2	BA211-1274	AB-60	A47-500K-Z	Q13-133	U48	Volume #2
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R3A	500K	1/2	BA211-1274	AB-60	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	

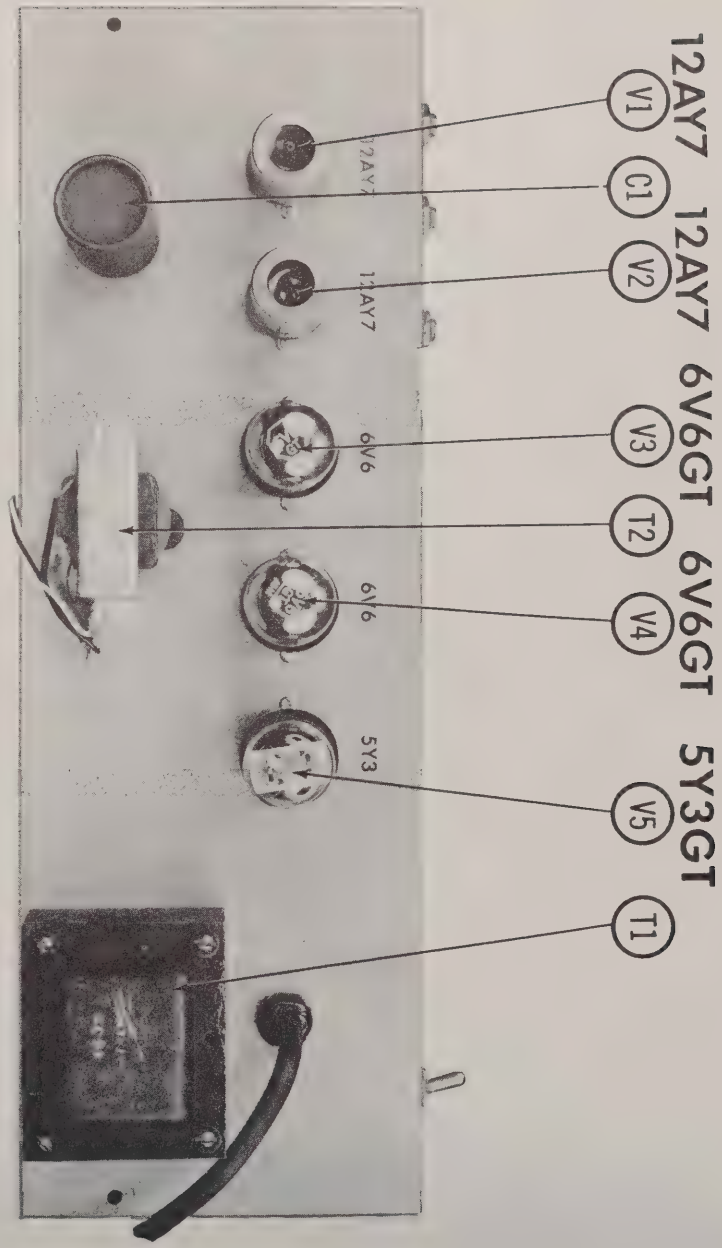
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	LECTROLAB PART No.	IRC PART No.	
R4	33K			BTS-33K	
R5	33K			BTS-33K	
R6	10Meg			BTS-10Meg	
R7	10Meg			BTS-10Meg	
R8	200K 5%			BTS-200K 5%	
R9	200K 5%			BTS-200K 5%	
R10	100K			BTS-100K	
R11	200K 5%			BTS-200K 5%	
R12	200K 5%			BTS-200K 5%	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	LECTROLAB PART No.	IRC PART No.	
R13	1500Ω			BTS-1500	
R14	100K 5%			BTR-100K 5%	
R15	100K 5%			BTR-100K 5%	
R16	10K 5%	1		BTA-10K	
R17	470K			BTS-470K	
R18	22K			BTS-22K	
R19	470K			BTS-470K	
R20	220Ω	5		PW7-250	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	LECTROLAB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .53A	600VCT @ .069A	5VAC @ 2A	6.3VAC @ 1.7A	46.70	P9305 ①	P-3051		22R02	R-9B ①

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	LECTROLAB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	12K	6-8Ω	330-1	Z1007	A-2936	A-3852	24S61	S-55X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	LECTROLAB PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	S-153	12A31Z6.5	

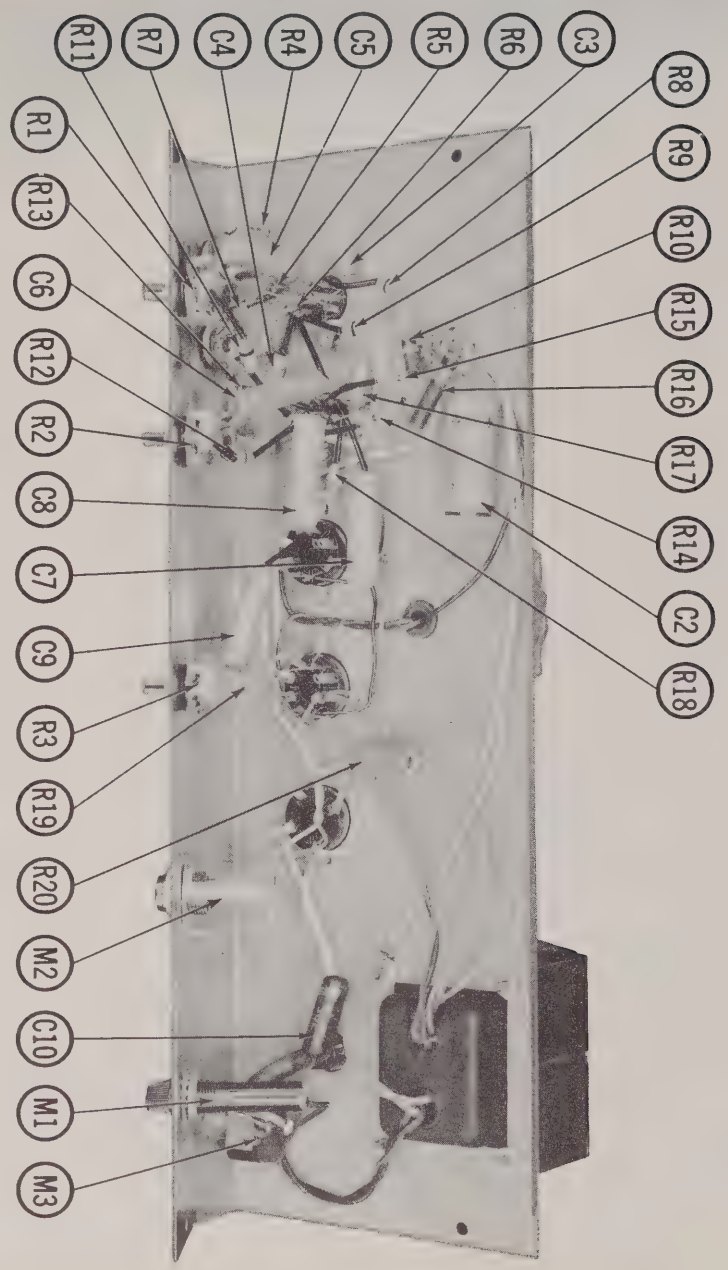
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			LECTROLAB PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V			312002. (3AG-2A)	342001	AGC 2	HKP

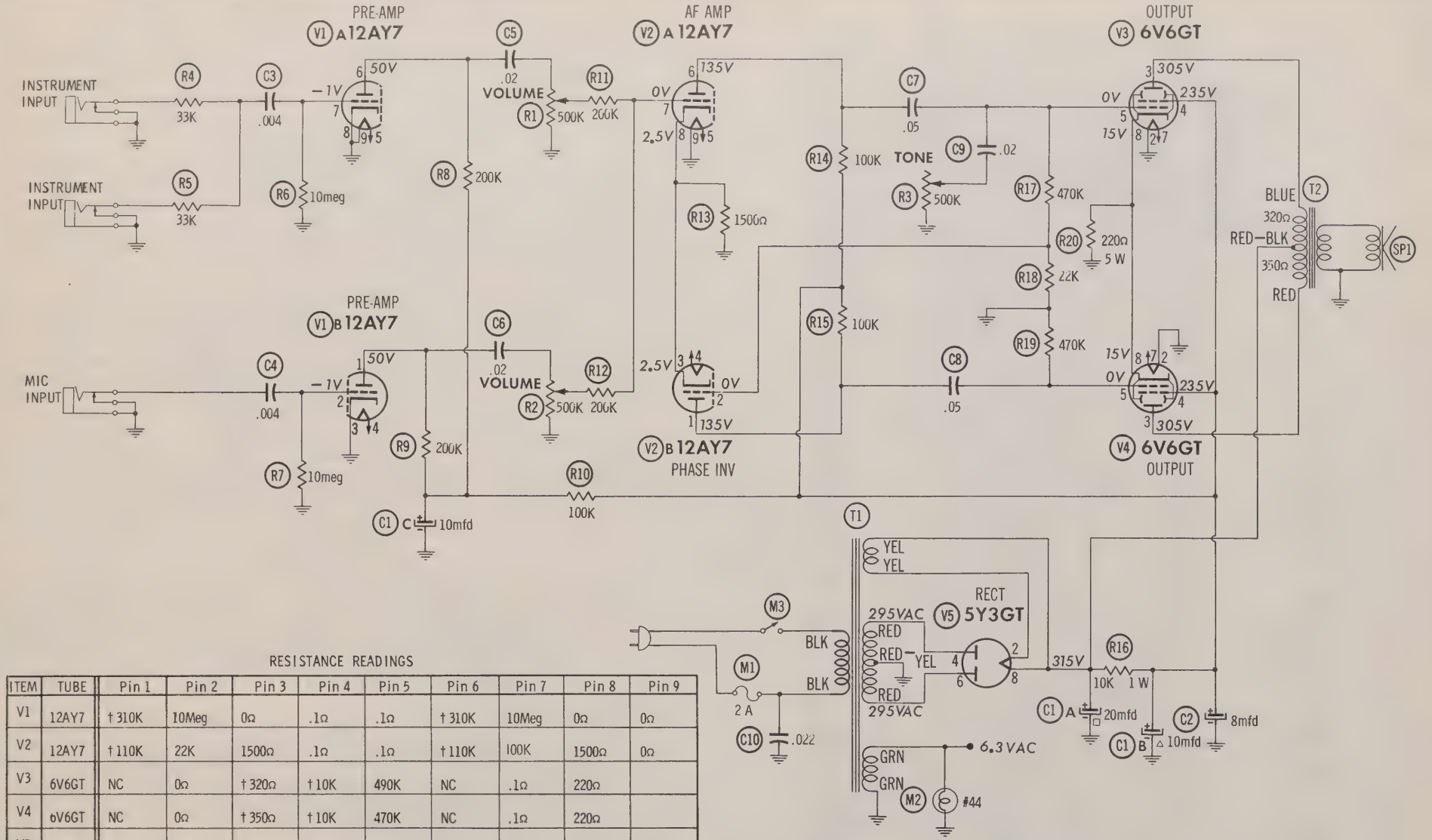
MISCELLANEOUS

ITEM No.	PART NAME	LECTROLAB PART No.	NOTES
M2 M3	Pilot Light Switch		#44 On-Off (Power) Toggle

CHASSIS—BOTTOM VIEW



LECTROLAB MODEL R-500



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AY7	†310K	10Meg	0Ω	.1Ω	.1Ω	†310K	10Meg	0Ω	0Ω
V2	12AY7	†110K	22K	1500Ω	.1Ω	.1Ω	†110K	100K	1500Ω	0Ω
V3	6V6GT	NC	0Ω	†320Ω	†10K	490K	NC	.1Ω	220Ω	
V4	6V6GT	NC	0Ω	†350Ω	†10K	470K	NC	.1Ω	220Ω	
V5	5Y3GT	NC	20K	NC	150Ω	NC	140Ω	NC	20K	

† MEASURED FROM PIN 8 OF V5.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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LECTROLAB MODEL R-600

LECTROLAB
MODEL R-600

LECTROLAB
MODEL R-600

TRADE NAME	Lectrolab Model R-600
SUPPLIER	Spiegel Inc., 1061 W. 35th. St., Chicago 9, Illinois
TYPE SET	AC Operated 4 Channel Audio Amplifier
TUBES (Six)	Types 12AY7 AF Amplifier, 12AY7 AF Amp.-Phase Inv., (2) 6V6GT Output, 6SJ7 Vibrato Osc., 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC 50/60 Cycle RATING .51 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

LECTROLAB
MODEL R-600

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. AF Amplifier	12AY7	
V2	2nd. AF Amp.-Phase Inv.	12AY7	
V3	Output	6V6GT	

ITEM No.	USE	TYPE	NOTES
V4	Output	6V6GT	
V5	Vibrato Osc.	6SJ7	
V6	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	LECTROLAB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■20	450		AFH3-35	CO260	FP376.3	TMT32	T-135	TVL-3779
B	▲10	450					TD-10-450		
C	10	450							
C2	8	300		PRS350V8	BR835	TC61	TD-8-350	FM-3508	TVA-1603
C3	8	300		PRS350V8	BR835	TC61	TD-8-350	FM-3508	TVA-1603

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

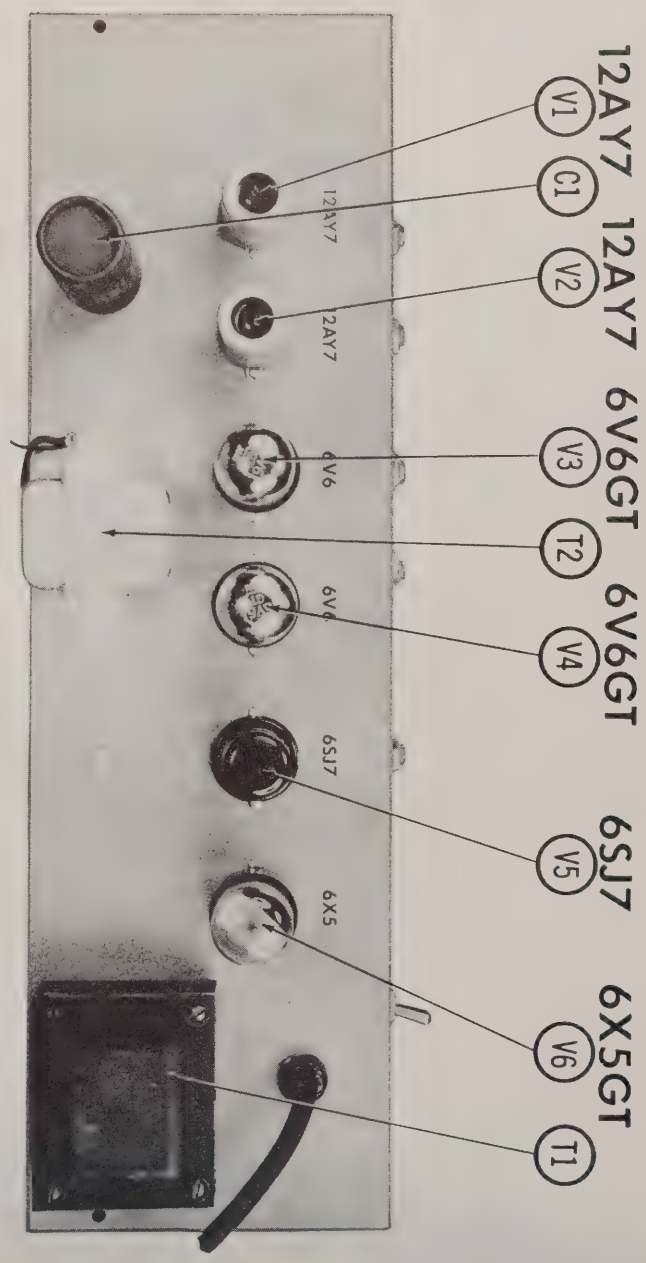
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	LECTROLAB PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.004	400		BPD-004	D6-402	CUB6D4	GP2-333-402	PT624	6TM-D4	
C5	.004	400		BPD-004	D6-402	CUB6D4	GP2-333-402	PT624	6TM-D4	
C6	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C7	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C8	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C9	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C10	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C11	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C12	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	Note 1
C13	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C14	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C15	.02	400		BPD-02	DD-203	CUB4S2	817-02	PT412	4TM-S2	
C16	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C17	.02	600		BPD-02	DD-203	CUB6S2	817-02	PT612	6TM-S2	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	LECTROLAB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	1/2	BA211-1274	AB-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R2A	500K	1/2	BA211-1274	AB-60	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R3A	500K	1/2	BA211-1274	AB-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R4A	500K	1/2	BA211-1274	AB-60	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R5A	1Meg	1/2	BA211-1728	AB-6■	A47-1Meg-S	Q11-137	U54	Speed
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R6A	1Meg	1/2	BA211-1728	AB-6■	A47-1Meg-S	Q11-137	U54	Modulation
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	LECTROLAB PART No.	IRC PART No.	
R7	39K			BTS-39K	
R8	39K			BTS-39K	
R9	39K			BTS-39K	
R10	33K			BTS-33K	
R11	10Meg			BTS-10Meg	
R12	220K			BTS-220K	
R13	10Meg			BTS-10Meg	
R14	220K			BTS-220K	
R15	100K	1		BTA-100K	
R16	220K			BTS-220K	
R17	220K			BTS-220K	
R18	100K 5%			BTR-100K 5%	
R19	1600Ω 5%			BTS-1600 5%	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	LECTROLAB PART No.	IRC PART No.	
R20	100K 5%			BTR-100K	
R21	470K			BTS-470K	
R22	22K			BTS-22K	
R23	470K			BTS-470K	
R24	250Ω	5		PW7-250	
R25	220K			BTS-220K	
R26	220K			BTS-220K	
R27	2.2Meg			BTS-2.2Meg	
R28	470K			BTS-470K	
R29	470K			BTS-470K	
R30	100K 5%			BTR-100K	
R31	10Meg			BTS-10Meg	
R32	1.2Meg			BTS-1.2Meg	
R33	12K	1		BTA-12K	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	LECTROLAB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @.51A	615VCT @.055A	5VAC @.20A	6.3VAC @2.3A	46-70	P9303 ①	P-2951 ①	PM-8407 ①	22R02 ①	R-7B ①

① Tape center tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	LECTROLAB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10K	6-8Ω	34-27	Z1006 ①	A-2936 ①	A-3870	22S56	S-55X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	LECTROLAB PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	2840	12A4	

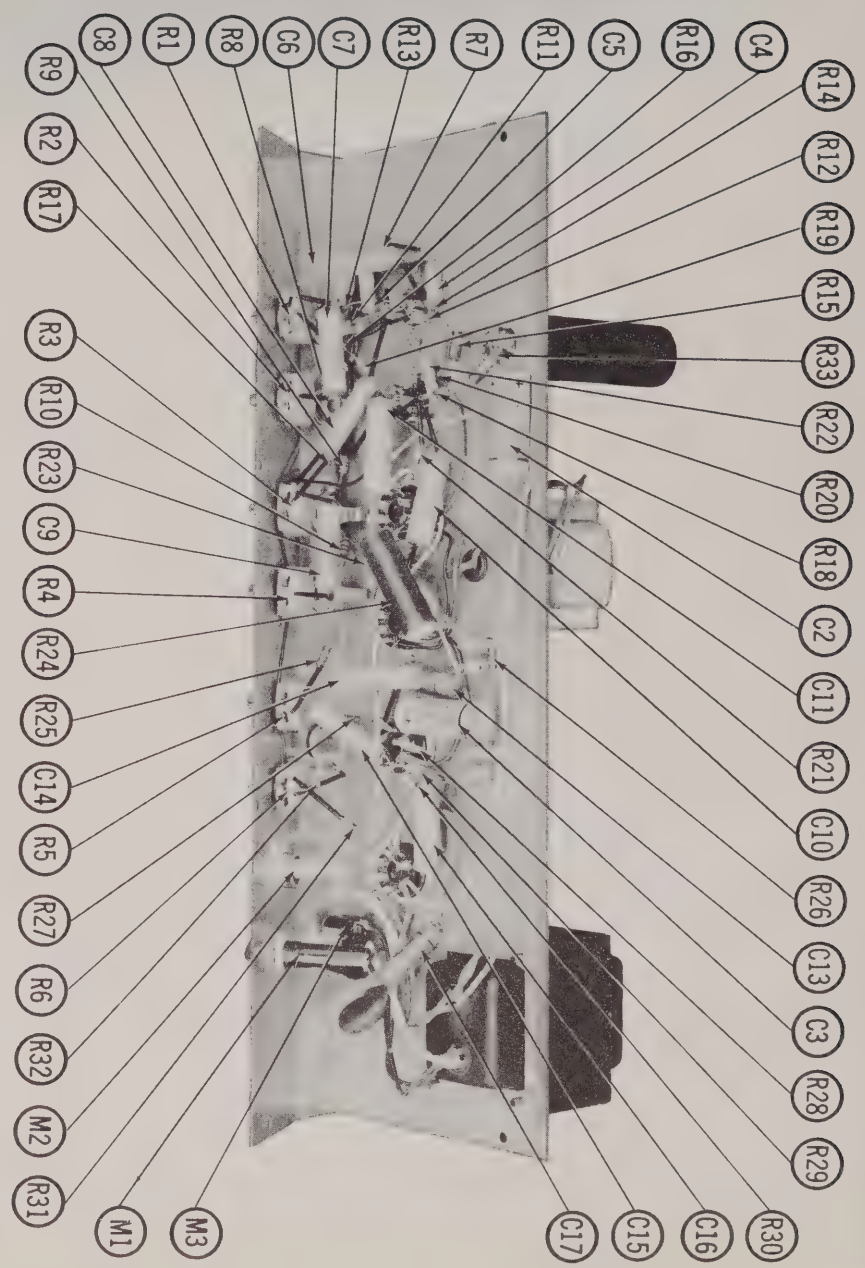
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			LECTROLAB PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V			312002. (3AG 2A)	342001	AGC 2	HKP

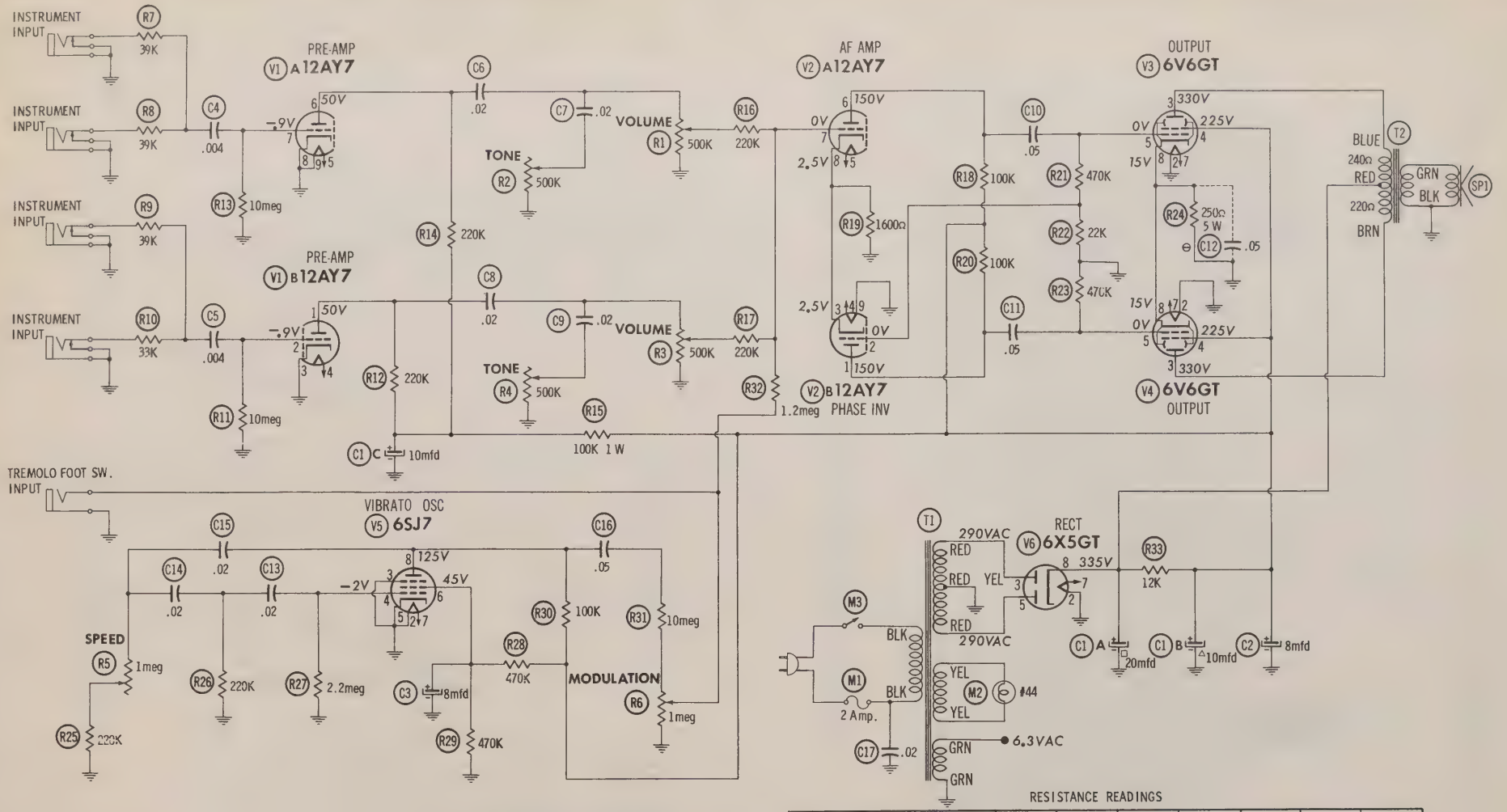
MISCELLANEOUS

ITEM No.	PART NAME	LECTROLAB PART No.	NOTES
M2 M3	Pilot Light Switch		#44 On-off (Power) SPST-Toggle Type

CHASSIS—BOTTOM VIEW



LECTROLAB MODEL R-600



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AY7	†330K	10Meg	0Ω	.1Ω	.1Ω	†330K	10Meg	0Ω	0Ω
V2	12AY7	†110K	22K	1600Ω	.1Ω	.1Ω	†110K	110K	1600Ω	0Ω
V3	6V6GT	NC	0Ω	†240Ω	† 12K	490K	NC	.1Ω	250Ω	
V4	6V6GT	NC	0Ω	†220Ω	† 12K	470K	NC	.1Ω	250Ω	
V5	6SJ7	0Ω	0Ω	0Ω	2.2Meg	0Ω	†350K	.1Ω	†110K	
V6	6X5GT	NC	0Ω	140Ω	NC	150Ω	TP	.1Ω	11K	

† MEASURED FROM PIN 8 OF V6.
NC NO CONNECTION.
TP TIE POINT.

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*TRADE MARK

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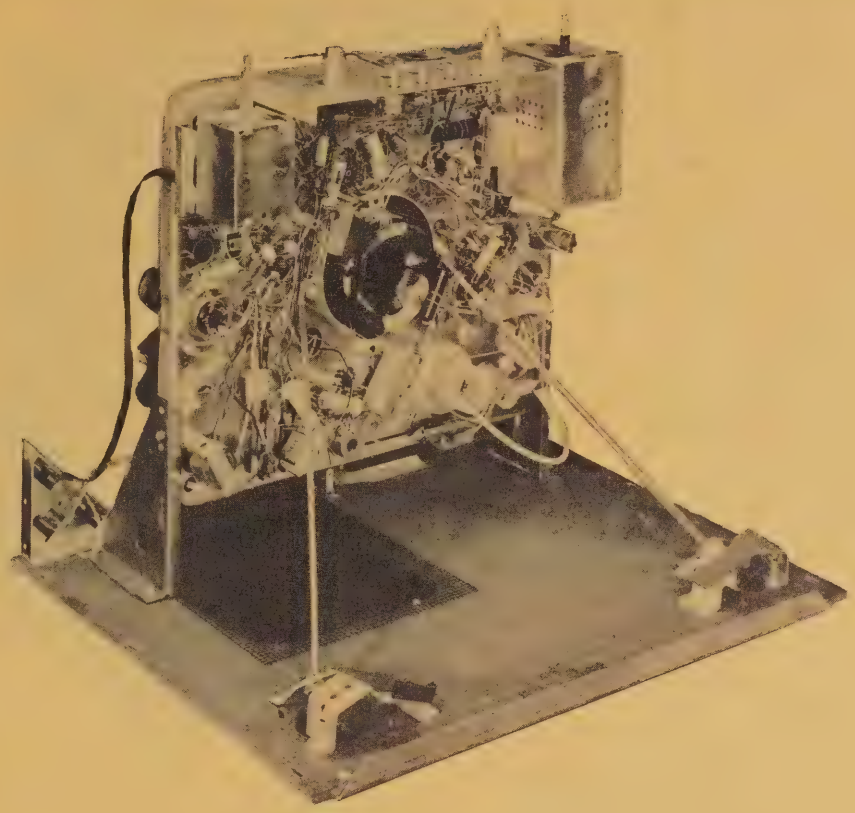

MAGNAVOX CHASSIS U18-01AA

TRADE NAME	Magnavox	CHASSIS U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB, V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB.....18 Series
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana	
TYPE SET	Television Receiver	
TUBES	Nineteen	
POWER SUPPLY	110-120 Volts AC - 60 Cycles	RATING: 185 Watts (1.66 Amp. @ 117 Volts)
TUNING RANGE	Channels 2 thru 13VHF, 14 thru 83UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

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MAGNAVOX CHASSIS V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB, U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB (18 Series)

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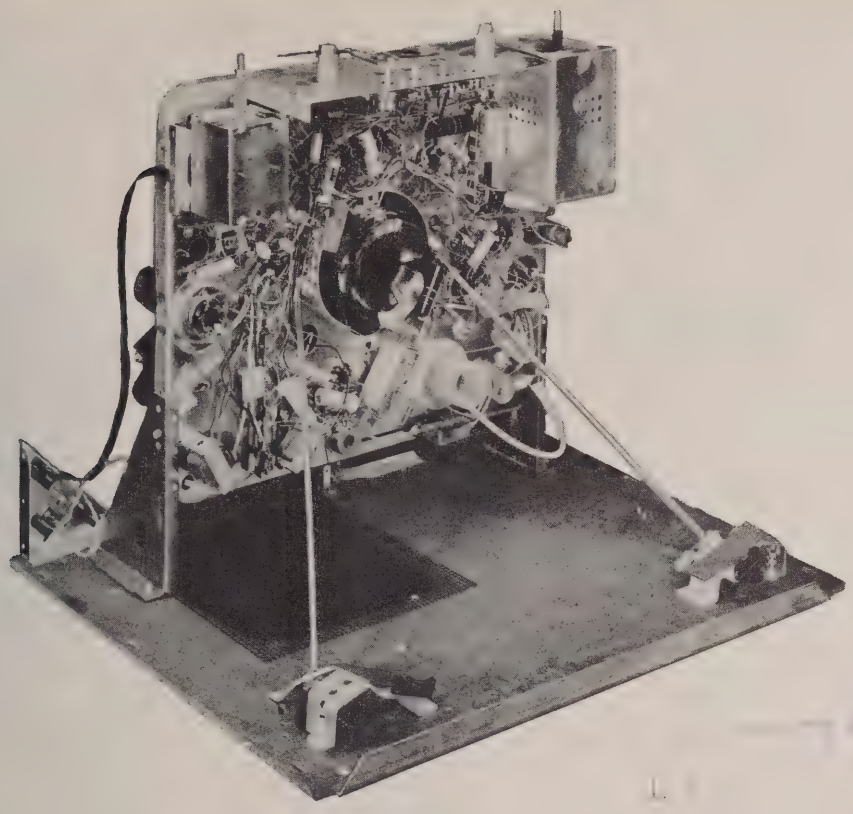

CHASSIS

U18-01AA 18 Series

DENVER, COLORADO

MAGNAVOX CHASSIS V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB, U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB (18 Series)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

SPECIAL ADJUSTMENT

Focus

Focus may be varied in steps by position of plug in focus adjustment board. Readjust Ion trap for best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to the set. Set the horizontal hold control at its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

FUSES

One fuse is used for horiz. sweep circuit protection. (For location see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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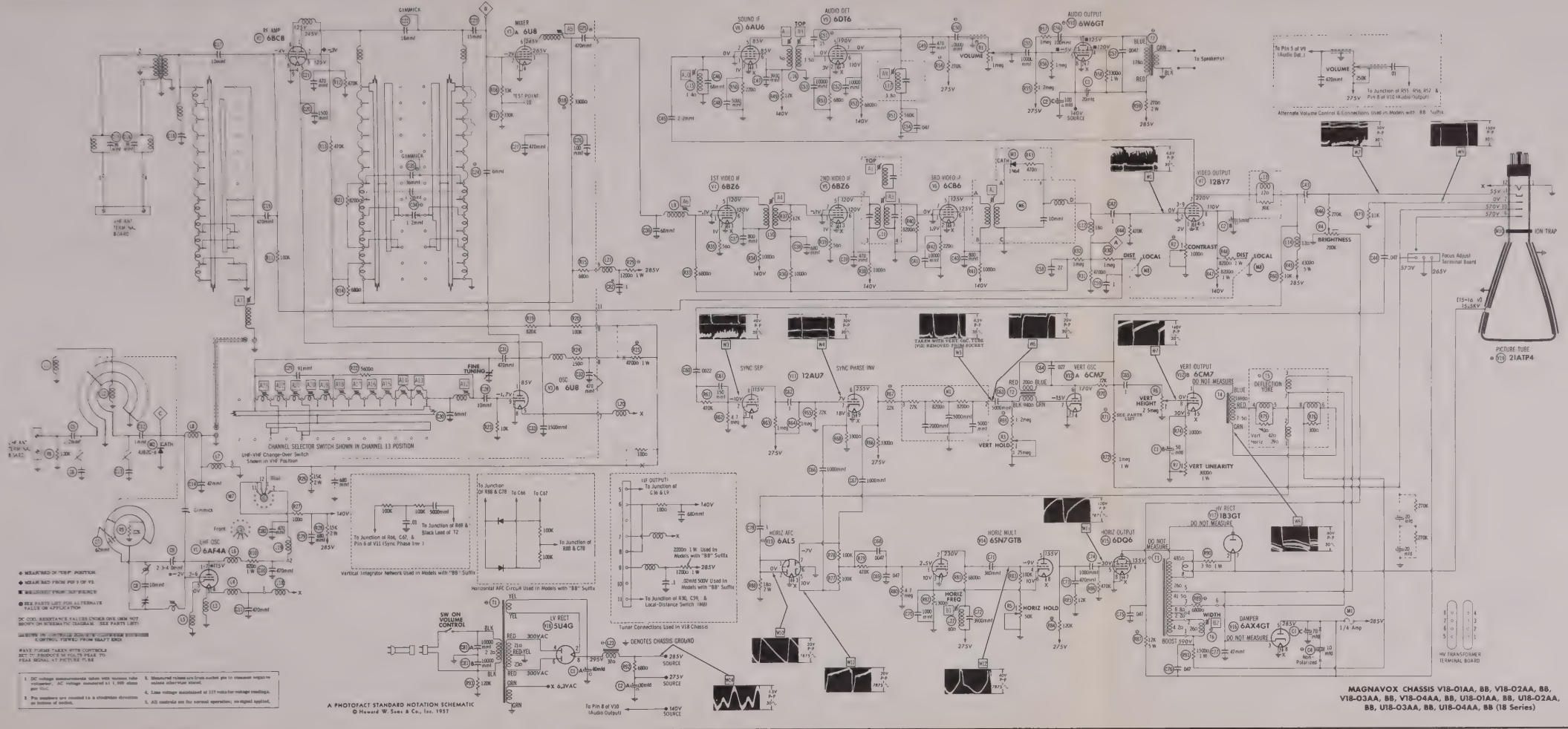
G774

DATE 2-57 SET 348 FOLDER 6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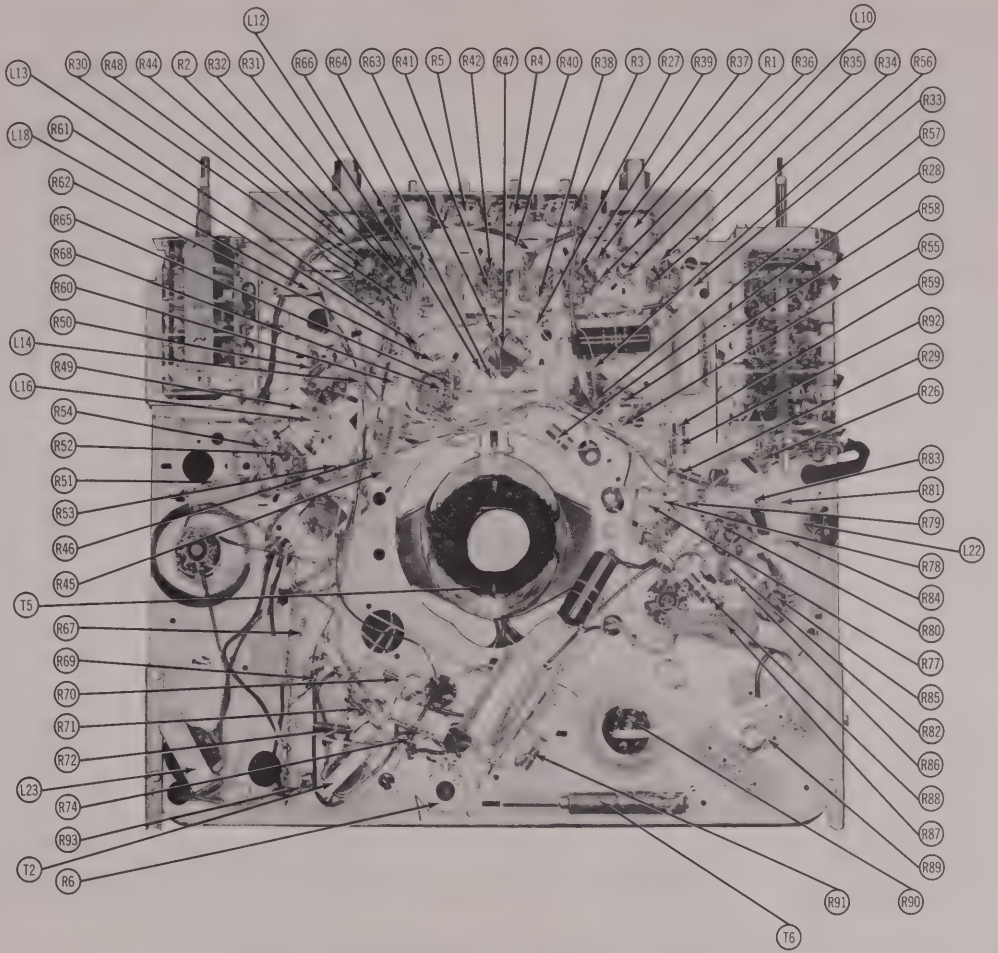
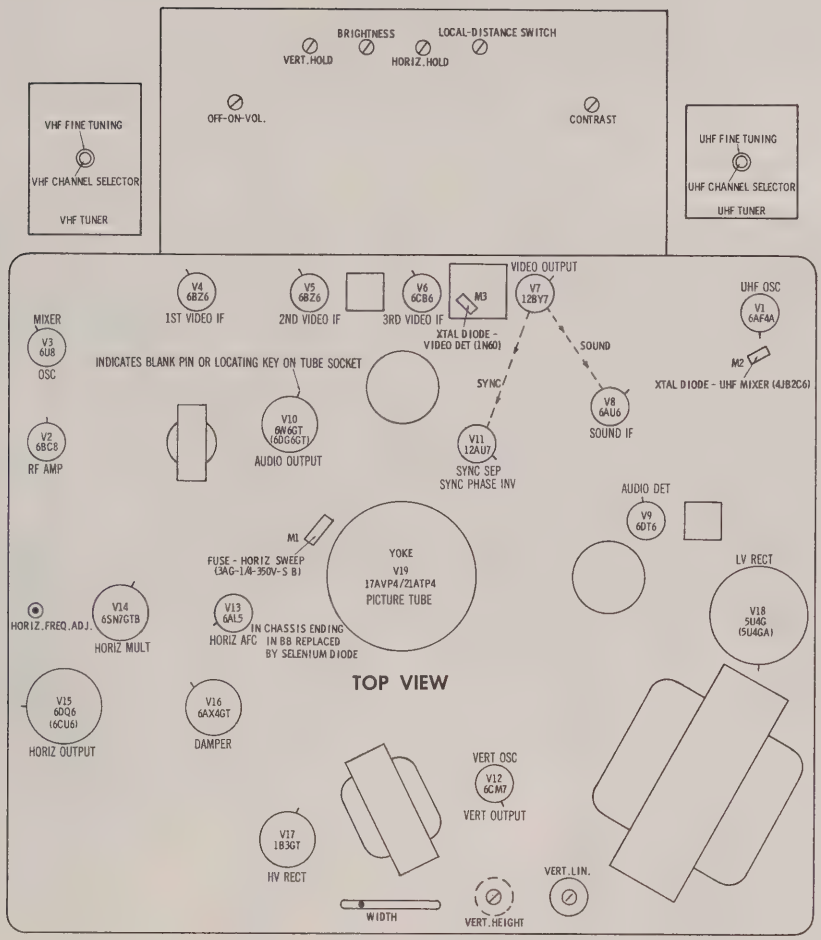
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
UHF-VHF Change-Over Switch Shown in VHF Position
Vertical Integrator Network Used in Models with "BB" Suffix
Horizontal AFC Circuit Used in Models with "BB" Suffix
Tuner Connections Used in V18 Chassis
Alternate Volume Control & Connections Used in Models with BB Suffix
SYNC SEP
SYNC PHASE INV
VERT OSC
VERT OUTPUT
VERT HEIGHT
VERT LINEARITY
VERT HOLD
HORIZ AFC
HORIZ MULT
HORIZ OUTPUT
HORIZ FREQ
HORIZ HOLD
DAMPER
BOOST 390V
WIDTH
HV RECT
HV TRANSFORMER TERMINAL BOARD
PICTURE TUBE
ION TRAP
DEFLECTION YOKE
BRIGHTNESS
CONTRAST
VIDEO OUTPUT
AUDIO OUTPUT
VOLUME
SOUND IF
AUDIO DET
MIXER
RF AMP
OSC
UHF OSC
LV RECT
SW ON VOLUME CONTROL
FINE TUNING
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
Focus Adjust Terminal Board
To Speakers
DO NOT MEASURE
1/4 Amp
Not Polarized
DENOTES CHASSIS GROUND
MAGNAVOX CHASSIS V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB, U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB (18 Series)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V18, V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V4, V5, V6, Diode (M3), V7, V10
No pic, no sound, has snow - V2, V3, V4, V1 (UHF)
No pic, has sound, has raster -V7, V19
Has pic, no sound - V8, V9, V10

SYNC FAILURE
No vert. sync - V11, V12
No horiz. sync - V11, V13 (Diode in "BB" Chassis), V14
No vert. or horiz. sync - V11

SWEEP FAILURE
No raster, has sound - V13, V14, V15, V16, V17, V19, Fuse (M1)
No vertical deflection - V12
Poor vert. linearity or foldover - V12
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V18
Vert. off freq. - V11, V12
Horiz. off freq. - V11, V13, V14

PROPERTY OF

MAGNAVOX CHASSIS V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB, U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB (18 Series)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias battery to the ungrounded side of C58. Connect the negative lead of a 1.5 volt bias battery to the ungrounded side of C59. Connect the positive leads to chassis. Set the local-distant switch to local position. Turn the contrast control fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to grid (pin 1) of V4. Low side to chassis.	43.0MC (10MC Swp)	47.25MC	Any unused channel	Vert. Amp. thru 10K to point (A). Low side to chassis.	A1	Preset A4 by turning fully counter clockwise. Adjust to place marker in trap notch as in Fig. 1. This may be done with the slug in either of two positions. Use the one farthest from the chassis.
2.	"	"	"	42.75MC 45.75MC	"	"	A2, A3, A4	Adjust A2 for maximum gain with markers as indicated in Fig. 2. Adjust A3 to place 45.75MC at 50% on curve. Adjust A4 to place 42.75MC at 60%. Use only enough sweep generator output to provide usable pattern on scope.
3.	"	High side to point (B). Low side to chassis.	"	"	Any unused high band channel	"	A5, A6	Adjust A5 for maximum gain with 45.75MC at 45% on response curve. Adjust A6 for maximum gain and proper tilt as in Fig. 2.
4.	1000Ω	High side to point (C). Low side to tuner chassis.	"	"	UHF	"	A7	Adjust for response similar to Fig. 2 with MINIMUM tilt.

SOUND IF ALIGNMENT

Tune the receiver to a strong local TV station and adjust A8 for maximum volume and MINIMUM distortion.
Reduce the signal input by removing the antenna or by placing an attenuator between the antenna and antenna terminals so that with the volume control set for maximum volume, the sound will be barely audible.
Adjust A9 for MINIMUM noise and clearest sound.
With the same weak signal, adjust A10 and A11 for MINIMUM noise and clearest sound.
Reduce the signal input even further until noise is present retouch A9 for MINIMUM noise and clearest sound.

VHF OSCILLATOR ALIGNMENT

Leave bias connect as under Video IF Alignment. Leave local-distant switch in local position and contrast full counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the fine tuning control to the mid-position of its range.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Fig. 3	Across antenna terminals thru network (Fig. 3).	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point (A). Low side to chassis.	A12	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

RF, MIXER AND UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

FIG. 1

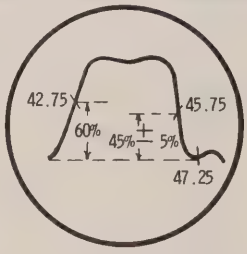


FIG. 2

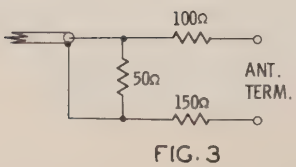


FIG. 3

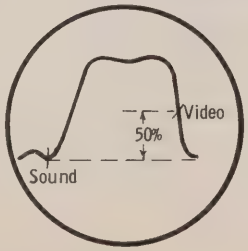
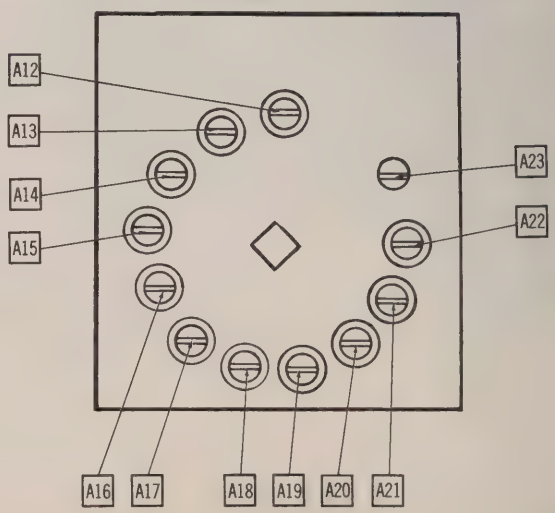
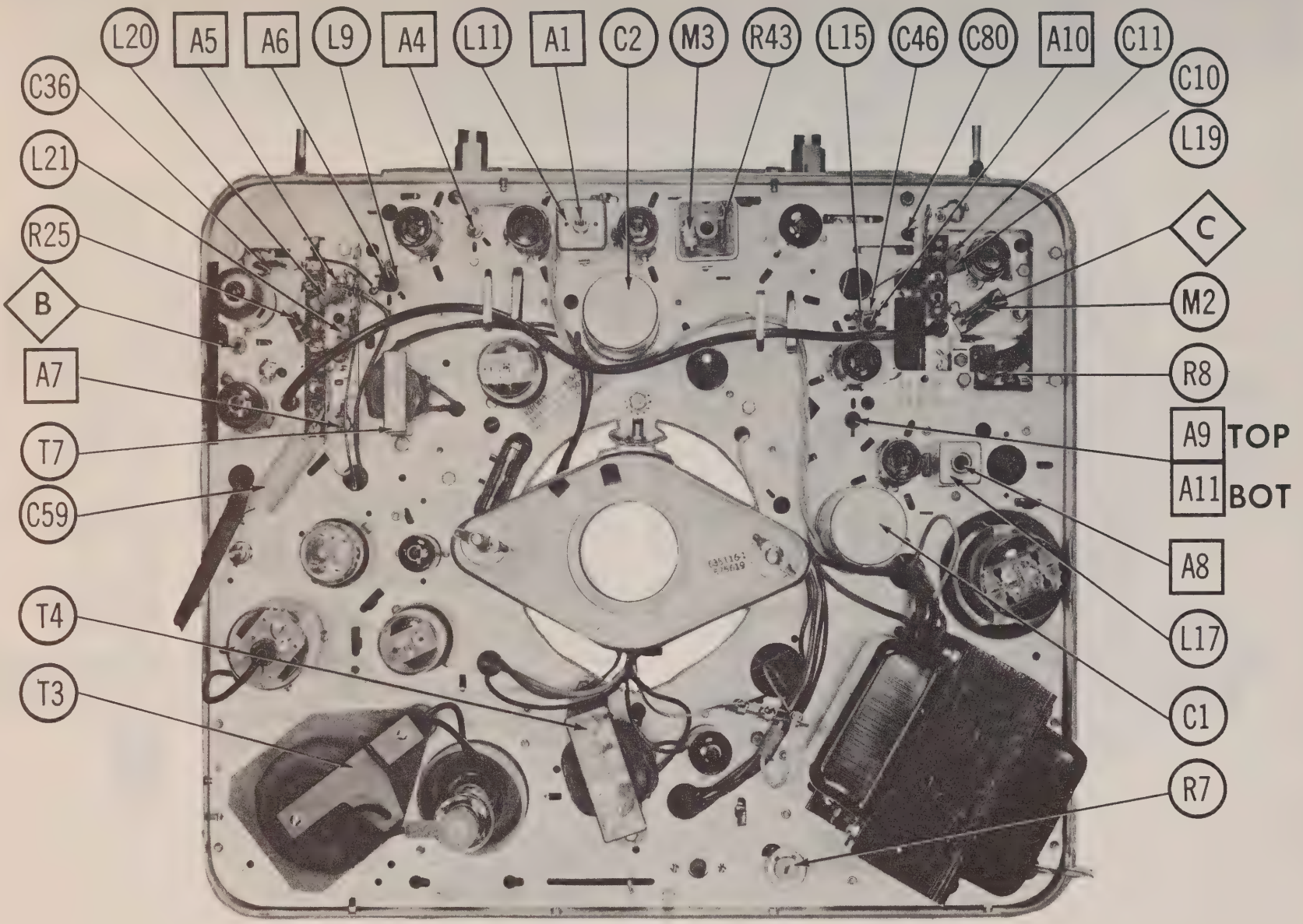


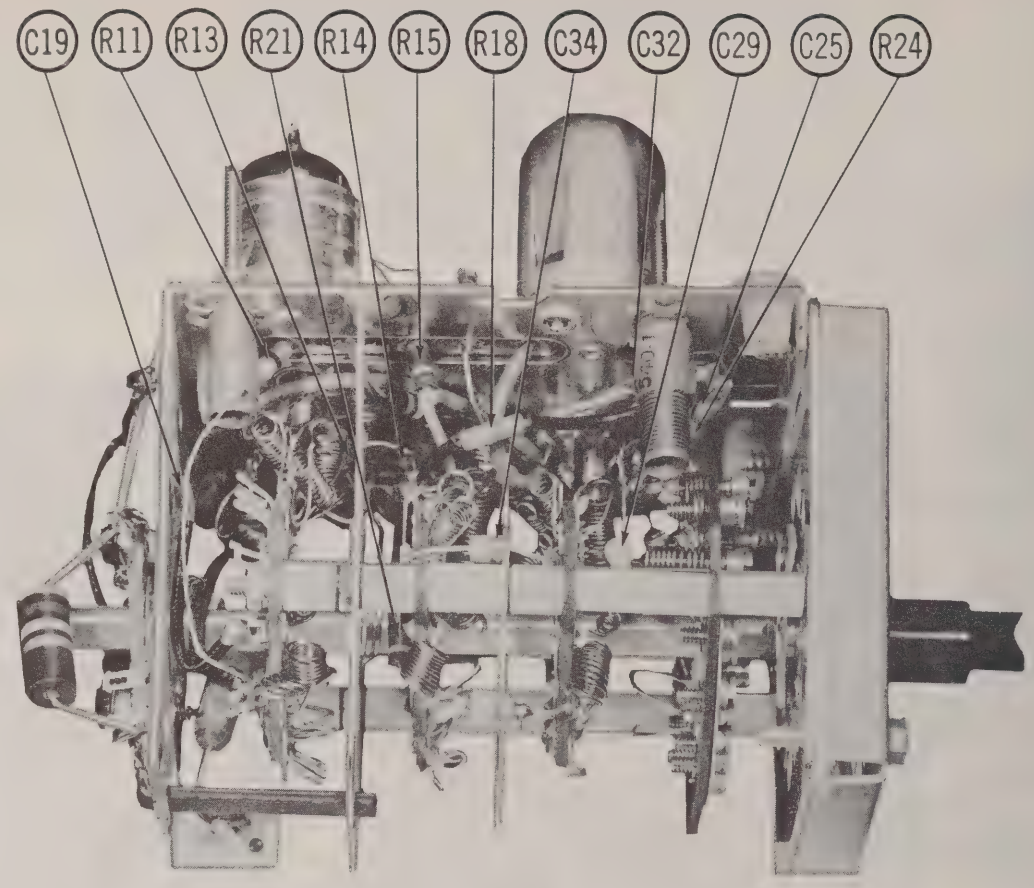
FIG. 4



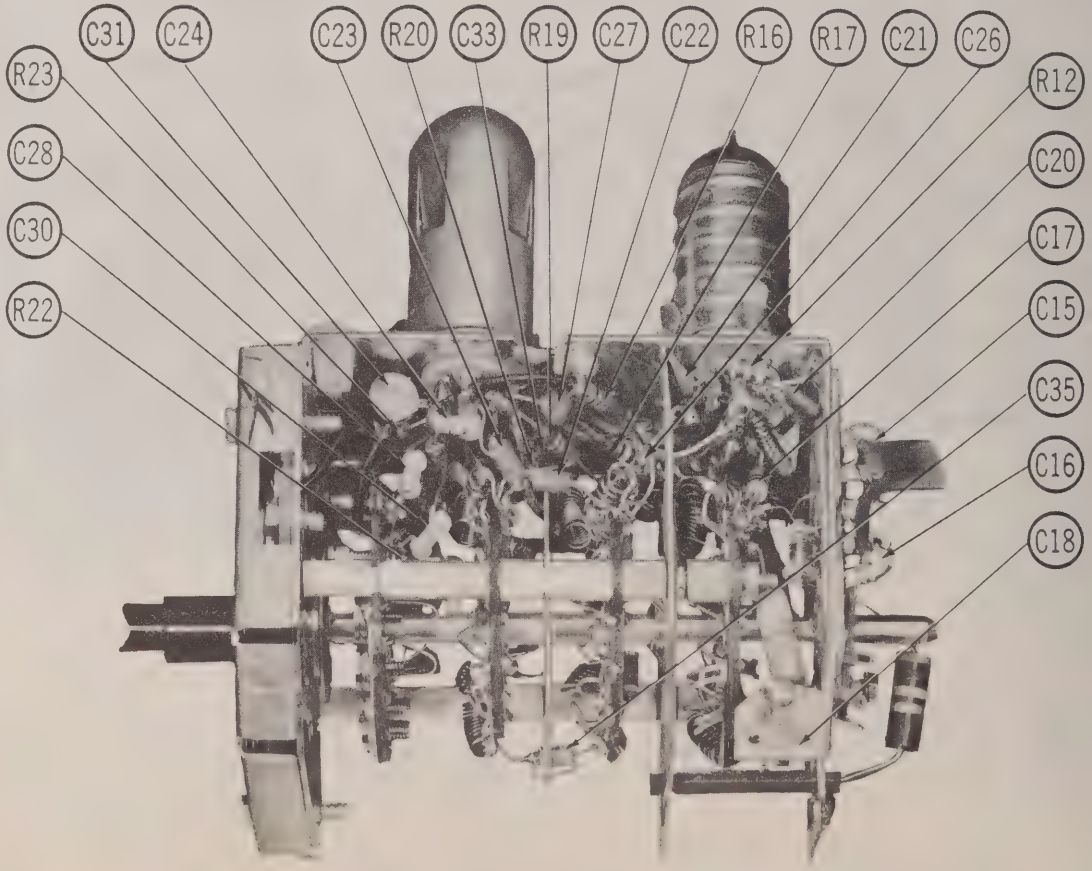


CHASSIS-TOP VIEW

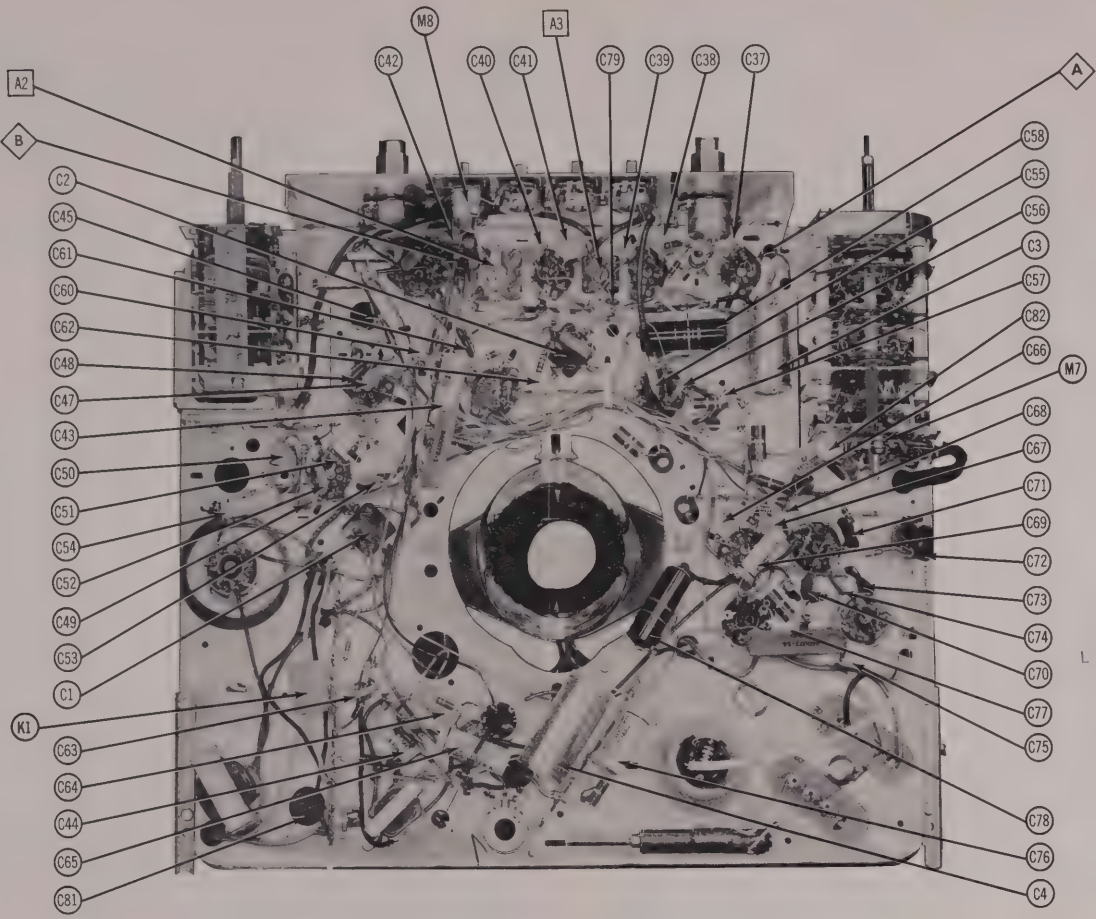
MAGNAVOX CHASSIS V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB, U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB (18 Series)



VHF TUNER-LEFT SIDE



VHF TUNER-RIGHT SIDE

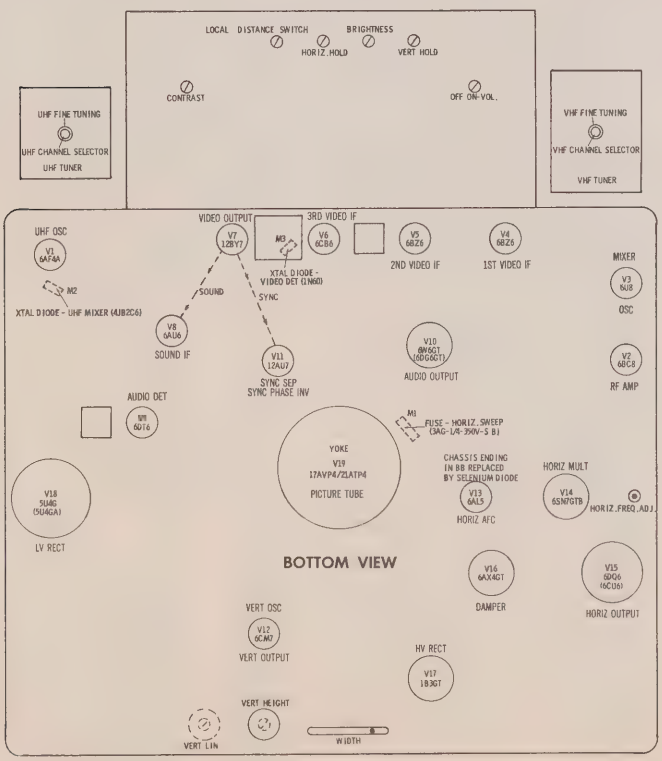


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AF4A	■ °900Ω	22K	0Ω	.1Ω	0Ω	22K	■ °900Ω		
V2	6BC8	† 1900Ω	220K	INF	0Ω	.1Ω	INF	1.1Meg	0Ω	0Ω
V3	6U8	■ 500Ω	360K	■ 100K	0Ω	.1Ω	† 5200Ω	0Ω	0Ω	10K
V4	6BZ6	1Meg	56Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V5	6BZ6	1Meg	56Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V6	6CB6	.1Ω	220Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V7	12BY7	● 100Ω	470K	0Ω	.1Ω	.1Ω	0Ω	† 4300Ω	■ 8200Ω	0Ω
V8	6AU6	1.4Ω	0Ω	.1Ω	0Ω	■ 12K	■ 12K	220Ω		
V9	6DT6	3.5Ω	680Ω	.1Ω	0Ω	† 270K	■ 6800Ω	560K		
V10	6W6GT	TP	0Ω	† 480Ω	† 3600Ω	550K	NC	.1Ω	70K	
V11	12AU7	† 1Meg	4.7Meg	0Ω	0Ω	0Ω	† 4000Ω	22K	3300Ω	.1Ω
V12	6CM7	°3200Ω	NC	0Ω	0Ω	.1Ω	ǂ 1.8Meg	● 1.7Meg	● 1.9Meg	● 2500Ω
V13	6AL5	18Ω	18Ω	.1Ω	0Ω	5Meg	0Ω	5Meg		
V14	6SN7GTB	4.7Meg	† 7500Ω	1300Ω	120K	† 150K	1300Ω	0Ω	.1Ω	
V15	6DQ6	NC	0Ω	NC	† 12K	470K	TP	.1Ω	0Ω	TOP CAP ǂ 26Ω
V16	6AX4GT	NC	NC	7Meg	NC	† 37Ω	NC	0Ω	.1Ω	
V17	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ǂ 511Ω
V18	5U4G	NC	20K	NC	21Ω	NC	23Ω	NC	20K	
V19	PIX TUBE	0Ω	11K	PIN 6 1600Ω	PIN 10 1600Ω	PIN 11 ● † 310K	PIN 12 .1Ω			

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
° MEASURED IN UHF POSITION
† MEASURED FROM PIN 8 OF V18.
ǂ MEASURED FROM PIN 3 OF V16.
■ MEASURED FROM 140V SOURCE.
TP TIE POINT
NC NO CONNECTION



TUBE PLACEMENT CHART
SET 348 FOLDER 6

MAGNAVOX CHASSIS V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB, U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB (18 Series)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	UHF Oscillator	6AF4A	
V2	RF Amplifier	6BC8	
V3	Mixer-Oscillator	6L6	
V4	1st Video IF Amplifier	6BZ6	
V5	2nd Video IF Amplifier	6BZ6	
V6	3rd Video IF Amplifier	6CB6	
V7	Video Output	12BY7	
V8	Sound IF Amplifier	6AL8	
V9	Audio Detector	6DT6	

ITEM No.	USE	TYPE	NOTES
V10	Audio Output	6W6GT	
V11	Sync Sep -Sync Phase Inv	12AU7	
V12	Vert Osc Vert Output	6CM7	Note 1
V13	Horiz. AFC	6AL5	Note 2
V14	Horiz. Mult.	6BN7A-TB	
V15	Horiz. Output	6DQ6	Note 4
V16	Damper	6AX4GT	
V17	H.V. Rectifier	1B3GT	
V18	I.V. Rectifier	5U4G	Note 3

Note 1. 6DD8GT used in chassis ending in BB.
Note 2. Used only in chassis ending in AA.
Note 3. 5U4GA may be used in some versions.
Note 4. 6CU5 may be used in some versions

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	MAGNAVOX PART No.	SYLVANIA PART No.	GENERAL ELECTRIC PART No	SYLVANIA PART No	
V19	21ATP4	21ATP4 1			Aluminized 2 Silver screen '65
			21ATP4 / 21ATP4A 1	21ATP4 2 / 21ATP4A 2	
	17AVP4	17AVP4 1		17AVP4 2	
		17AVP4A 1	17AVP4A	17AVP4A 2	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	350	27021-62	RE1040	DH040	FP264 5	TMT-97	T 110	X23B1 *
B	450	50			BR505	TC39	TD-30-350	MT-4050	
C	450	50						MT-4550	
C2A	30	350	27022-55	AFM3 114-70		FP247		T-802	X23A8 *
B	65	50				TC60		MT-4530	
C	200	200							
C3	30	350	27023 20	PK5450V30	BR3035	TC65	TD-20-350	FM-4520	TVA-1605
C4	10	350	27023-26 (Note 1)	NP-PK5310-[ ] VMP10	BR3035 † BR3035 †	TC65 †		MT-4530 † MT-4530 †	X1327 *

Note 1 Non polarized unit
† Connect negative leads together
* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	1.5			MPG-SI 1	TCS-1	C10V15C	TCC-1	ET-5515	5TCCB-V1	
C6			25018-10							
C7	63									
C8	10			MPG-SI 10	TCS-10	C10Q1C	ED-10	UC-545	5GA-Q3	
C9	3, 3-4	C	19729-3							
C10	470		25017-8	BPD-00047	SD-471	BTA10T47	ED-470	UC-5347	5GA-T47	
C11	470		25017-8	BPD-00047	DD-471	BTA10T47	ED-470	UC-5347	5GA-T47	
C12	1		36132-114	MPG-SI 1	TCS-1	C10V15C	TCC-1	ET-5515	5TCCB-V1	
C13			25018-10							
C14	47			M750-SI 47	TC-47	C10Q47U	TCT-47	NT-5447	5TCU-Q47	
C15	39		25017-30	M750-SI 39	TCN-39	C10Q39U	TCT-39			
C16	39		25017-30	M750-SI 39	TCN-39	C10Q39U	TCT-39			
C17	10		25032-127	MPG-SI 10	TCS-10	C10Q1C	ED-10	UC-545	5GA-Q3	
C18			25018-8							
C19	470		25017-8	BPD-00047	DD-471	BTA10T47	ED-470	UC-5347	5GA-T47	
C20	1500		25017-10	BPD-0015	DD-152	BTA10Q15	ED-1500	UC-5315	5GA-Q15	
C21	470		25017-8	BPD-00047	DD-471	BTA10T47	ED-470		5GA-T47	
C22	.18		36216-4							
C23	1		36207-10	MPG-SI 15	TCS-15	C10Q5C	ED-15	UC-5415	5GA-Q25	
C24	8									
C25	470		25017-8	BPD-00047	DD-471	BTA10T47	ED-470	UC-5347	5GA-T47	Note 3
C26	100		25017-34	BPD-0001	DD-101	C10T1C	ED-100	UC-531	5GA-T1	Note 3
C27	470		25017-8	BPD-00047	DD-471	BTA10T47	ED-470	UC-5347	5GA-T47	
C28	10		25068-126	MPG-SI 10	TCS-10	C10Q1C	ED-10	UC-546	5GA-Q3	
C29	.01									
C30	.15		25008-143							
C31	470		25018-15	BPD-00047	DD-471	BTA10T47	ED-470	UC-5347	5GA-T47	
C32	470		25017-8	BPD-00047	DD-471	BTA10T47	ED-470	UC-5347	5GA-T47	
C33	1500		25017-10	BPD-0015	DD-152	BTA10Q15	ED-1500	UC-5315	5GA-Q15	Note 4
C34	1.2		25032-115	MPG-SI 1.2	TCS-1	C10V15C	TCC-1	ET-5515	5TCCB-V1	Note 5
C35	.36		25018-5							
C36	68			MPG-SI 68	TCZ-68	C10Q68C	TCC-68		5TCC-Q68	
C37	1500		25018-14	BPD-008	DD-801	L10T8	ED-830		5GA-T8	
C38	680		25018-6	DE-680	DD-681	L10T68	ED-680		5GA-T68	
C39	470		25018-16	DE-470	DD-471	L10T47	ED-470		5GA-T47	
C40	800		25018-14		DD-801	L10T8	ED-830		5GA-T8	
C41	10000		25017-3	BPD-01	DD-103	BTA10S1M	GP-10000	DC511	5HK-S1	
C42	.1	300	25018-18	P388N-1		DF-104	CUB32P1		GEM-301	5TM-P1
C43	1	300	25020-12	P388N-1		DF-104	CUB32P1		GEM-301	5TM-P1
C44	.047	400	25020-13	BPD-047		DD-473	CUB4G47		GEM-4147	5TM-D47
C45	2.2		36222-118	MPG-SI 2.2	TCZ-2R2	C10V2RC	TCC-3.2			5TCCB-V22
C46	68		25018-7	M750-03S5	TCN-68	C10Q68U	TCT-68		5TCU-Q68	
C47	1000		25017-4	BPD-004	DE-403	BTA10D4	GP-4000	UC-5340	5GA-D03	
C48	5000		25017-1	BPD-005	DD-503	BTA10D5	GP-5000	DC535	5HK-D5	
C49	470		25017-8	BPD-00047	DD-471	BTA10T47	ED-470	UC-5347	5GA-T47	
C50	10000		25017-3	BPD-01	DD-103	BTA10S1M	GP-10000	DC511	5HK-S1	Note 6 Note 8
C51	15		25032-103							
C52	10000		25018-19	BPD-01	DD-103	BTA10S1M	GP-10000	DC511	5HK-S1	
C53	10000		25018-19	BPD-01	DD-103	BTA10S1M	GP-10000	DC511	5HK-S1	
C54	.047	400	25020-13	BPD-047	DE-503	CUB2E47		DE-4047	GEM-4047	
C55	10000		25017-3	BPD-01	DD-103	BTA10S1M	GP-10000	DC511	5HK-S1	
C56	100		25018-13	M750-SI 100	TCN-100	C10T1C	TCT-100	NT-531	5TCU-T1	
C57	.0047	500	25020-5	BPD-0047	DD-472	CUB5D47	GP-4700	GEM-5247	5TM-D47	
C58	.22	300	25020-15	P388N-22		CUB2P22		GEM-3022	5TM-P22	
C59	.1	300		P388N-1		DF-104	CUB32P1		GEM-301	5TM-P1
C60	.0022	400	25021-3	BPD-0022	DE-223	CUB4D22	GP-2200	GEM-4222	5TM-D22	
C61	350		19023B-534	BPD-00015	DD-151	L10T15	ED-150	UC-5315	5GA-T15	
C62	.1	300	25021-13	P388N-1		DF-104	CUB4P1	GEM-401	5TM-P1	
C63	5000		25017-1	BPD-005	DD-503	BTA10D5	GP-5000	DC535	5HK-D5	
C64	.027	400	25021-9	BPD-03	DF-303	CUB4E27		GEM-4127	5TM-D27	
C65	1	400	25021-13	P388N-1		DF-104	CUB4P1	GEM-401	5TM-P1	
C66	1000		25018-14							
C67	1000		25018-8							

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C68	.0047	400	25021-2	BPD-05	DD-472	CUB4D47	GP-4700	GEM-4247	4TM-D47	
C69	.047	200	25021-3	BPD-05	DF-503	CUB2E47		GEM-3147	2TM-S47	
C70	1000		25018-8	BPD-001	DD-102	BYA5DI	ED-1000	DC931	5HK-D1	
C71	560		25032-142	1464-00036		1R3T38			M5-336	
C72	3900		25032-138	1464-00035		3R5D39			M5-339	
C73	470		25032-146	1464-00047		1R5T47			M5-347	
C74	1000		25018-8			L10D1	RD-1000	DC931	5HK-D1	
C75	.047	400	25021-2	BPD-05	DF-503	CUB4E47		GEM-4147	4TM-D47	
C76	.047	400	25021-11	BPD-05	DF-503	CUB4E47		GEM-4147	4TM-D47	
C77	.47	4000	25175-23							
C78	1	500	25020-13		DF-104	CUB6P1		GEM-501	6TM-P1	
C79	680		25018-6	BPD-00068	DD-681	BTA10T68	ED-680	UC-5368	5GA-T68	
C80	470		25018-6		DE-471	L10T47			5GA-T47	
C81A	10000		25019-3	BPD-1X01	DDM2-103	BYD6D31	GP-10000	DC511	5HK-S1	
B	10000						GP-10000	DC511		
C82	1	400	25021-13	P388N-1		DF-104	CUB4P1		4TM-P1	Note 7

Note 2. Some versions may use a 0.56MF in this application (Part #19029J-125).
Note 3. Some versions may use a 375MF in this application.
Note 4. Not used in some versions.
Note 5. Some versions may use a .56MMF in this application.
Note 6. Not used in chassis ending in BB.
Note 7. A 20000MMF used in chassis ending in BB.

CONTROLS

ITEM No.	RATING	WATTS	REPLACEMENT DATA MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	220126-46	AB-70	A47-1Meg-C	Q3-137	U53	Volume - Note 1
B	Shaft			AK-3	FS-3	Not Req.	Not Req.	
C	Switch		230136-50	KB-43	BWE-12	76-1	U8-26	
R2A	1000Ω	½						Contrast - Note 3
B	Shaft							
R3A	1. 25Meg	½	230153-3	BK-743	A47-1.5Meg	Q1-158	TA15L	Vert. Hold
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R4A	300Ω	½	230153-5	BK-46	A47-300K-C	Q1-139	U-43	Brightness
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R5A	50K	½	230153-1	BK-31	A47-50K-C	Q1-133	TA5-L	Horiz. Hold
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R6A	2. 5Meg	½	230146-2	AB-83	A47-2. 5Meg	Q1-239	TA255L	Vert. Height
B	Shaft			AK-1	FKS-¼ 4	Not Req.	Not Req. FL-4K	Vert. Lin. -wire wound
R7	30000Ω	1	230120-3					

Note 1. An alternate 250K control part #230135-3 used in chassis ending in BB.
Note 2. An alternate 600Ω control part #230135-56 used in chassis ending in BB.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA MAGNAVOX PART No.	IRC PART No.	NOTES
R8	100K		230104-88	BTS-100K	
R9	22K		230104-78	BTS-22K	
R10	820Ω	1	230145-21	BTA-820	
R11	100K		230104-86	BTS-100K	
R12	470K		230104-94	BTS-470K	
R13	470K		230104-94	BTS-470K	
R14	680Ω		230104-80	BTS-680	
R15	680Ω		230104-80	BTS-680	
R16	33K		230104-80	BTS-33K	
R17	330K		230104-98	BTS-330K	
R18	330Ω		230104-70	BTS-330	Note 1
R19	820K		230104-97	BTS-820K	
R20	100K		230104-86	BTS-100K	
R21	8200Ω		230104-73	BTS-8200	
R22	15MΩ		230104-58	BTS-15M	
R23	5600Ω		230104-74	BTS-5600	
R24	10K		230104-74	BTS-10K	
R25	150Ω		230104-52	BTS-150	
R26	4700Ω	1	230105-70	BTA-4700	Note 2
R27	15K	½	230106-78	BTS-15K	
R28	100Ω		230104-50	BTS-100	
R29	15K	½	230106-78	BTS-15K	
R30	1200Ω	1	230145-63	BTA-1200	Note 2
R31	1Meg		230104-88	BTS-1Meg	
R32	47000Ω 5%		230104-175	BTS-4700 5%	
R33	1Meg		230104-58	BTS-1M	
R33	8800Ω 5%		230104-170	BTS-8800 5%	
R34	1000Ω		230104-63	BTS-1000	
R35	56Ω		230104-47	BTS-56	
R36	1000Ω		230104-63		
R37	12K 5%		230104-168		
R38	1000Ω		230104-63	BTS-1000	
R39	56Ω		230104-47	BTS-56	
R40	8200Ω 5%		230104-181	BTS-8200 5%	
R41	1000Ω		230104-63	BTS-1000	
R42	220Ω		230104-54	BTS-220	
R43	470Ω				
R44	470K		230104-94	BTS-470K	
R45	4300Ω 5		260073-1	1 3/4A-4300	
R46	270K		230104-92	BTS-270K	
R47	8200Ω	1	230105-73	BTA-8200	
R48	8200Ω	1	230105-73	BTA-8200	
R49	12K		230104-76	BTS-12K	
R50	220Ω		230104-54	BTS-220	
R51	560K		230104-95	BTS-560K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA MAGNAVOX PART No.	IRC PART No.	NOTES
R52	4300Ω		230104-73	BTS-4300	
R53	680Ω		230104-60	BTS-680	
R54	270K		230104-91	BTS-270K	Note 4
R55	1. 2Meg 5%		230094-233	BTS-1. 2Meg 5%	
R56	1Meg 5%		230094-231	BTS-1Meg 5%	
R57	1Meg		230104-98	BTS-1Meg	
R58	330Ω	1	230105-68	BTA-330Ω	
R59	270Ω	2	230105-55	BTS-270	
R60	10K		230104-74	BTS-10K	
R61	470K		230104-94	BTS-470K	
R63	4. 7Meg		230104-106	BTS-4. 7Meg	
R63	1Meg		230104-98	BTS-1Meg	
R64	1Meg		230104-98	BTS-1Meg	
R65	330K		230104-78	BTS-33K	
R66	3300Ω 5%		230094-171	BTS-3300 5%	
R67	33K		230104-78	BTS-33K	Note 5
R68	3300Ω 5%		230094-171	BTS-3300 5%	Note 6
R69	1. 2Meg		230104-98	BTS-1. 2Meg	
R70	33K		230104-78	BTS-33K	Note 7
R71			230130-3		
R72	1Meg	1	230105-58	BTA-1Meg	
R73	11K 5%		230094-184	BTS-11K 5%	
R74	1000Ω		230104-63	BTS-1000	
R75	300Ω 5%		230094-165		
R76	3000Ω 5%		230094-146		
R77	100K		230104-86	BTS-100K	
R78	100K		230104-86	BTS-100K	
R79	470K		230104-94		
R80	4. 7Meg		230104-106		
R81	8800Ω 5%		230094-179	BTS-8800 5%	
R82	13000Ω		230094-180		
R83	100K 5%		230094-207		
R84	13K 5%		230094-209	BTS-13K 5%	Note 8
R85	12K		230104-76		
R86	470Ω		230104-94		
R87	12K 5%	5	260071-14	1 3/4A-12K	Note 9
R88	18Ω	3	230105-41		
R89	680Ω		230104-72	BTS-6800	Note 10
R90	3. 9Ω	1	230107-3	BW1-3. 9	
R91	1500Ω	1	230105-64	BTA-1500	
R92	680Ω		230104-60	BTS-680	
R93	130K		230102-1	BTS-130K	

Note 1. A 10K may be used in some versions.
Note 2. Not used in some versions
Note 3. A 2200Ω, 2W used in BB chassis (Part #230106-66).
Note 4. Not used in BB chassis.
Note 5. A 100K used in BB chassis (part #230104-86).
Note 6. A 1. 5Meg used in BB chassis (part #230094-10).
Note 7. Negative temperature coefficient resistor. Approximately 800K cold.
Note 8. A 16K used in some versions (Part #230094-211).
Note 9. A 8500Ω, 5W used in BB chassis (Part #270075-35).
Note 10. A 2700Ω used in BB chassis (Part #230104-67).

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MAGNAVOX PART No.	Hallicrafters PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC 60~ 66A	575VCT @ 250A	5V @ 3A	6. 3V @ 9. 5A	30007?-1 ① 30008?-1 ②	P9733 ③	P-3077 ③	P-8335 ③ ④	26R33 ③ ⑤	R-52BC ③ R-52B ⑤

① Used in Chassis ending in AA.
② Used in Chassis ending in BB.
③ Fabricate mounting.
④ Use original mounting bracket.
⑤ Parallel and phase 6. 3V filament windings
⑥ Parallel and phase 6. 3V @ 5A windings.
⑦ Tape low high voltage winding, Tape 6V @ 3A winding.
⑧ Tape 6. 3V @1. 5A winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA MAGNAVOX PART No.	Hallicrafters PART No.	Merit PART No.	RCA PART No. TYPE No	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert Osc Trans	320362-1				A-8295 *	FLY-79 *	
T3	Horiz Output Trans	320363-1						
T4	Vert Output Trans	320365-1	Z1807 ①	A-2824 ②		V35 ①	A-8141 ①	26S54 ① A-109X ① ②
T5A	Yoke(90°)Horiz. (12MH)	360817-1	DF607 ①	MDF-92 ①	225DI ①	Y90F19/42 ①	DY-16A ①	Y-16 ① Y-42-1 ①
B	Vert (45MH)	360819-1 ①						
T6	Width Coil	360653-1 ⑦	RF800 3 ①	MWC-10 ① ②	31ARI ③	20IR3A ①	WC-10 ①	WC-24 ① ② WC-11 ① ②

① Chassis ending in BB use Magnavox part #360700-1
② Cut and tape blanking lead
③ Drill new mounting hole(s).
④ Connect as auto transformer.
⑤ Yoke rear cover.
⑥ Use original yoke damping network.
⑦ Chassis ending with BB use Magnavox part #360699-1.
⑧ Use terminals #1 and #2
⑨ Use black and white terminals.
⑩ Use terminals C and E.
⑪ Use plain terminals
⑫ Use original mounting bracket.
⑬ Use coil (LJ).
⑭ Use red and blue terminals.
*This part may be superseded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL (CONNECTION)	Hallicrafters Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Rem Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	8					8	8	
						5	5	
	3					3	3	
	4					4	4	
	2					2	2	
	1					1	1	
Connect Width Coil Across	1 & 2					1 & 2	1 & 2	
Special Notes							⑭	

⑭ If insufficient width, add capacity (approx. 50-100MMF ⑪ 4KV) across horizontal yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	SEC	REPLACEMENT DATA MAGNAVOX PART No.	Hallicrafters PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T7	2000Ω	3-4Ω	320251-1 ① 320251-2 ②	Z1101	A-2939 ③	A-3323	24S50 ③	S-2X ③	

① Used in chassis ending in AA.
② Used in chassis ending in BB.
③ Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	MAGNAVOX PART No.	NOTES
L1	RF Choke	360574-30	
L2	RF Choke	360574-30	
L3	Fil. Choke	360574-8	
L4	Fil. Choke	360574-8	
L5	Calib. Choke	360523-7	
L6	RF Choke	360574-8	
L7	UHF IF Output	360574-50	
L8	UHF IF Output	360574-51	

ITEM No.	USE	MAGNAVOX PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L9	1st. Video IF	360640-1		TV-131	6226	
L10	2nd. Video IF	360636-1	17-6532	TV-130	6225	
L11	3rd. Video IF	360637-1	17-5003	TV-128	6223	Includes 47. 26MC trap
L12	Shunt Peaking Coil	360623-10	19-3550		6140	800 Microhenries
L13	Series Peaking Coil	360622-15	19-3250 *	TV-125 *	6181 *	225 Microhenries, wound on 56K resistor
L14	Shunt Peaking Coil	360622-16	19-3300	TV-126	6130	375 Microhenries
L15	1st. Sound IF	360657-1				
L16	2nd. Sound IF	360650-1				
L17	Quadrature Coil	360651-1				
L18	Fil. Choke	360621-3			6602	1 Microhenries, IRC part #CLA
L19	RF Choke	360574-8	19-1000		6603	3. 1 Microhenries
L20	Fil. Choke	360601-1				. 47 Microhenry, IRC part #CLA
L21	RF Choke	360601-1				. 47 Microhenry, IRC part #CLA

* Parallel with 39K resistor.

MAGNAVOX CHASSIS V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB, U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB (18 Series)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MAGNAVOX PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L22	60Ω		360579-1						HS-7	22-78 Millihenries

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	.250A	37Ω	.45 HY.	320058-3 ①	C5040 ②	C-2974 ②	C-2326 ②	26C44 ②	C-23X ②

① Alternate part #320058-2.
② Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MAGNAVOX PART No.	REPLACEMENT DATA
K1	Vertical Integrator	2000MMF 8200Ω 5000MMF 8200Ω 5000MMF 22K	250186-1	Aerovox PA110 Centralab PC100 Cornell-Dubilier 115TM1 Sprague V-1

FUSES

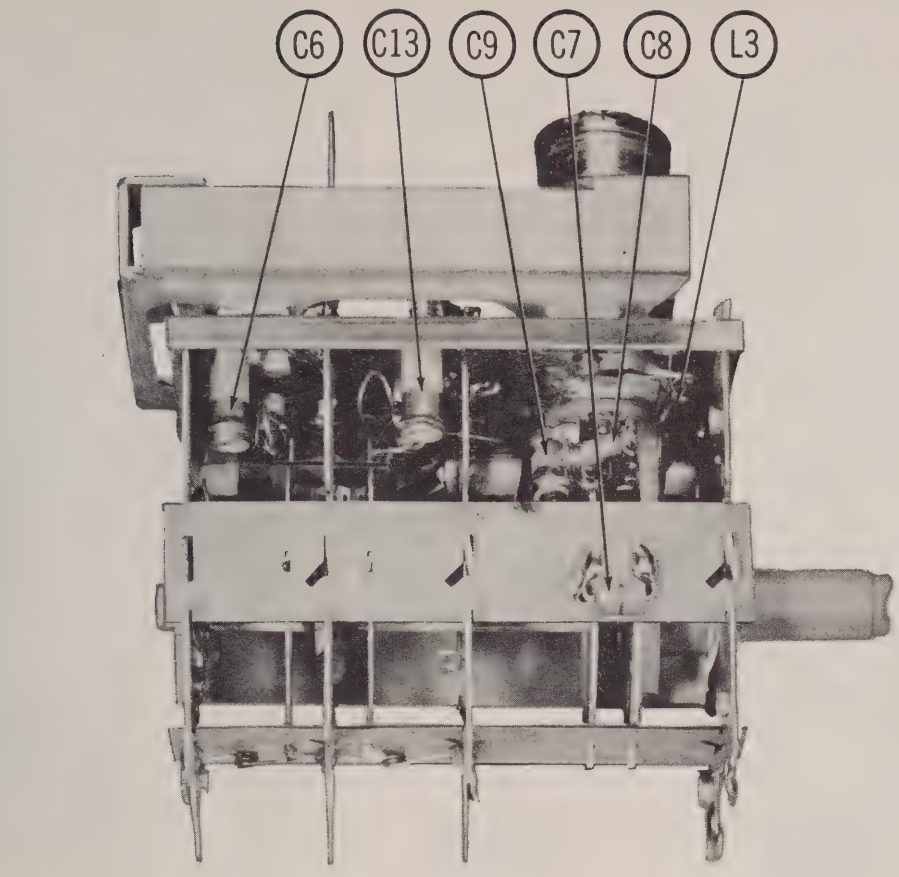
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MAGNAVOX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1/4A 250V S/B	180157-30		313.250 (3AG 1/4A S/B)	357001	MDL 1/4	4405

CRYSTAL DIODES

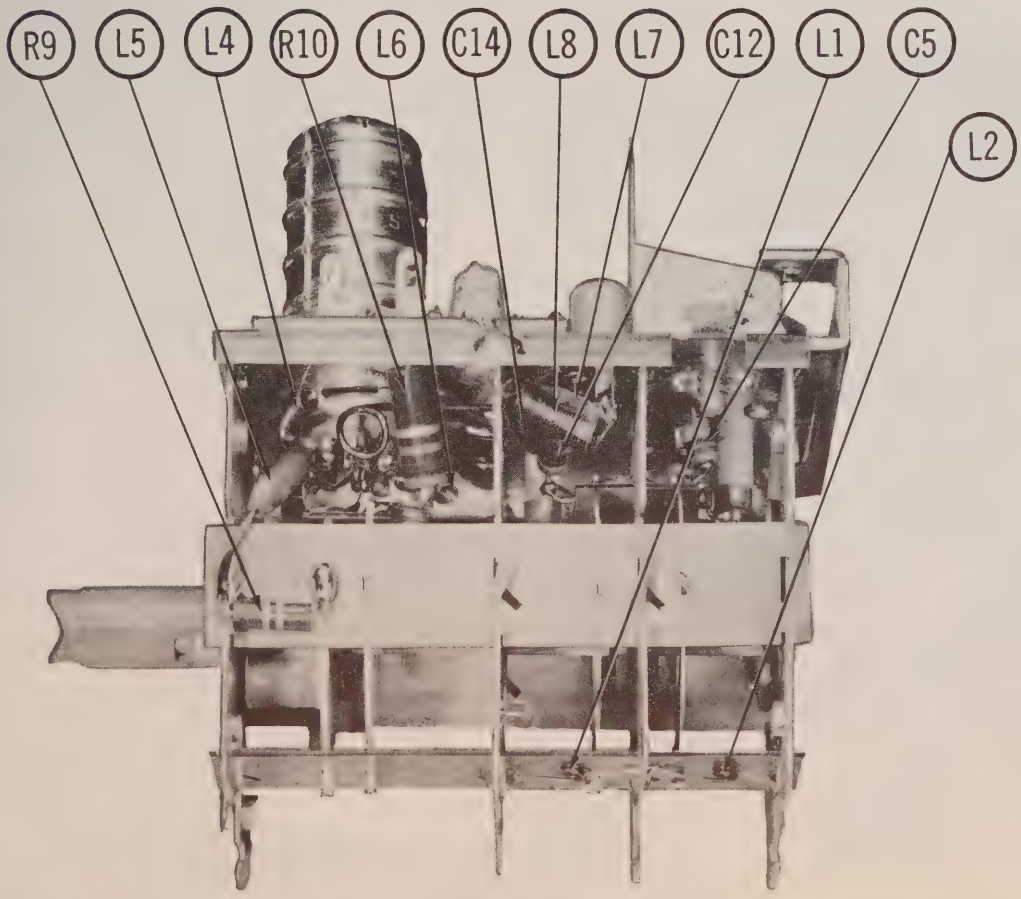
ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		MAGNAVOX PART No.	SYLVANIA PART No.	
M2	1N82A	530036-1	1N82A	UHF Mixer (Clip in)
M3	1N64		1N60	Video Detector (Pigtail)

MISCELLANEOUS

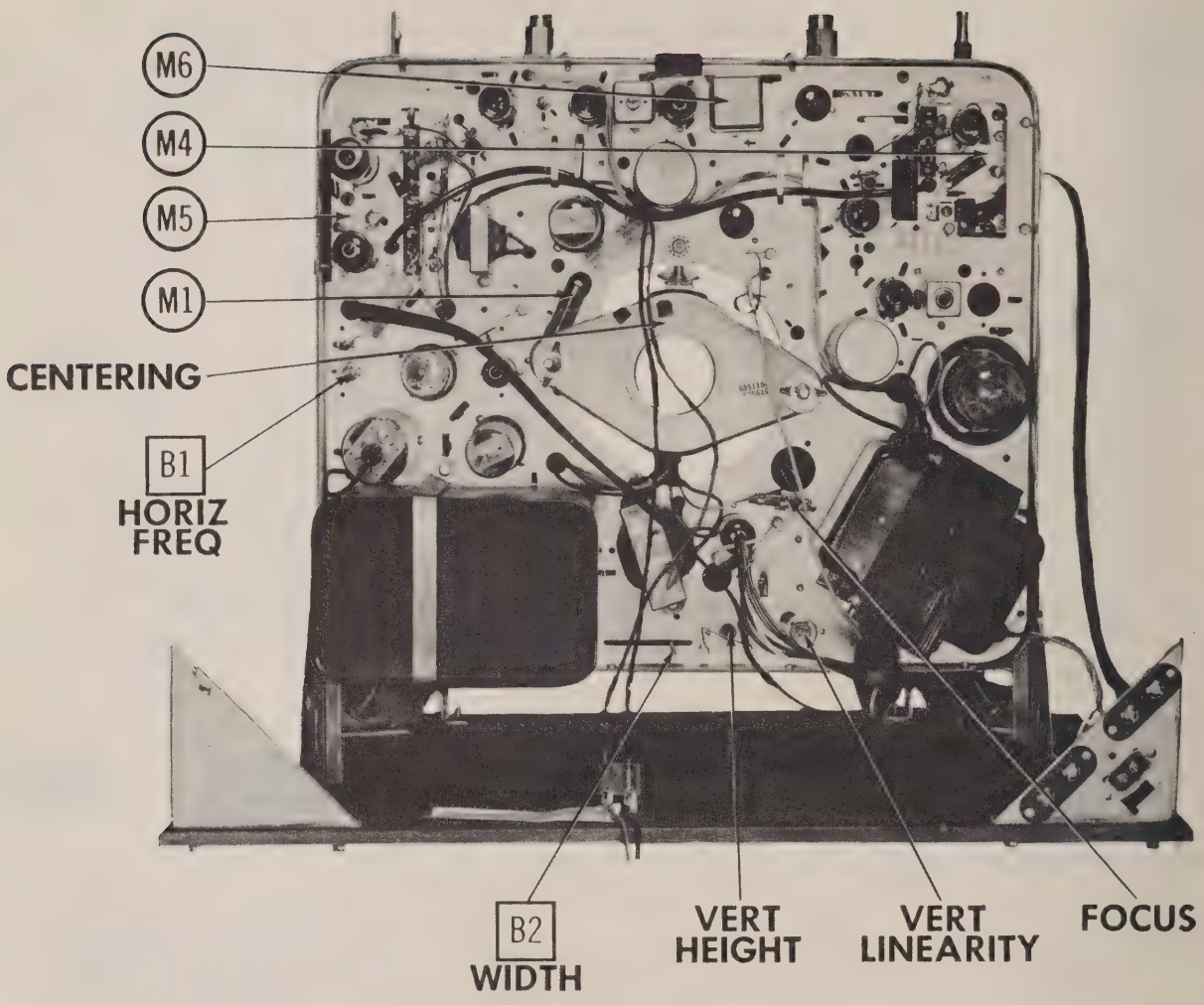
ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M4	Tuner	700530-2	UHF
M5	Tuner	700541-2	VHF
M6	Video Det. Assy.	360638-1	Includes trans., coil, 470Ω resistor, 10MMF Cap., and diode M3.
M7	Switch	160247-1	UHF/VHF change-over
M8	Switch	160263-2	Local-distant (DPDT)
M9	Centering Device		
M10	Ion Trap	360492-5	



UHF TUNER-LEFT SIDE



UHF TUNER-RIGHT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the horizontal hold control at the center of its range. Turn the horizontal frequency slug (B1) slowly clockwise while switching off station and back until the picture just loses sync. Turn B1 slowly counter clockwise until the picture just falls back in sync and then continue to turn counter clockwise $\frac{1}{2}$ turn.

The picture should hold sync at both extreme ends of the horizontal hold control. If necessary, readjust B1 SLIGHTLY and test for sync pull-in as above.

Adjust the width slug (B2) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

METEOR MODEL 4103-H (Ch. 549.20035)

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Meteor Model 4103-H (Ch. 549.20035)

TRADE NAME	Meteor, Model 4103-H, Ch. 549.20035
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Thirteen
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING: 117 Watts (1 Amp. @ 117 Volts AC)
TUNING RANGE	Channels 2 thru 13VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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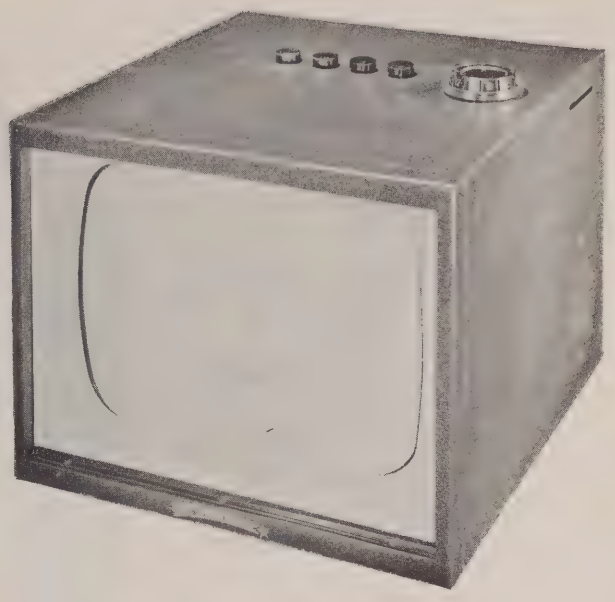
METEOR MODEL 4103-H (Ch. 549.20035)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type control knobs.
2. Remove 2 wood screws, remove rear cover.
3. Remove 5 wood screws holding front panel of bottom and remove HV lead.
4. Remove speaker leads, picture tube socket, Ion trap, centering device.
5. Remove 2 wood screws, remove antenna terminal assembly.
6. Remove 1 wood screw holding top chassis brace.
7. Remove 2 chassis bolts, remove chassis.
8. Remove 2 speaker nuts, remove speaker.



MODEL	CHASSIS
4103-H	549.20035

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of VHF tuner oscillator, it is necessary to remove the chassis from the cabinet. (See disassembly instructions.)

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 wood screws holding strip at bottom of safety glass. Using extreme caution, remove strip and remove safety glass.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

SPECIAL ADJUSTMENT

Focus

Adjust Ion trap for best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

To adjust the horizontal oscillator, remove the rear cover and supply power to the set. Set the horizontal hold control at the mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the buzz control (R8) for maximum volume and MINIMUM buzz.

FUSES

A 5Ω fusible resistor (R66) is used for LV power supply protection.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

METEOR MODEL
4103-H (Ch. 549.20035)

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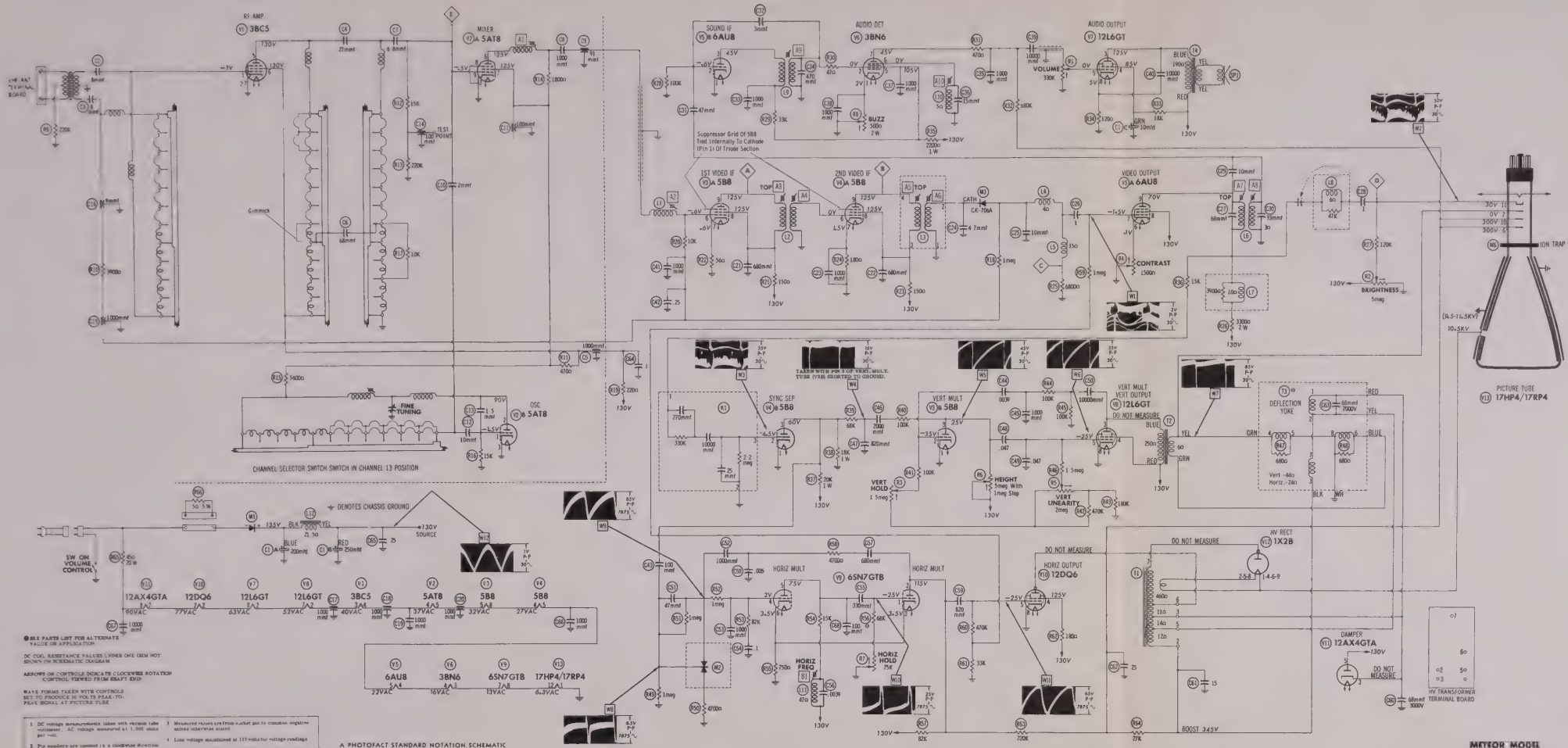

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END

WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.

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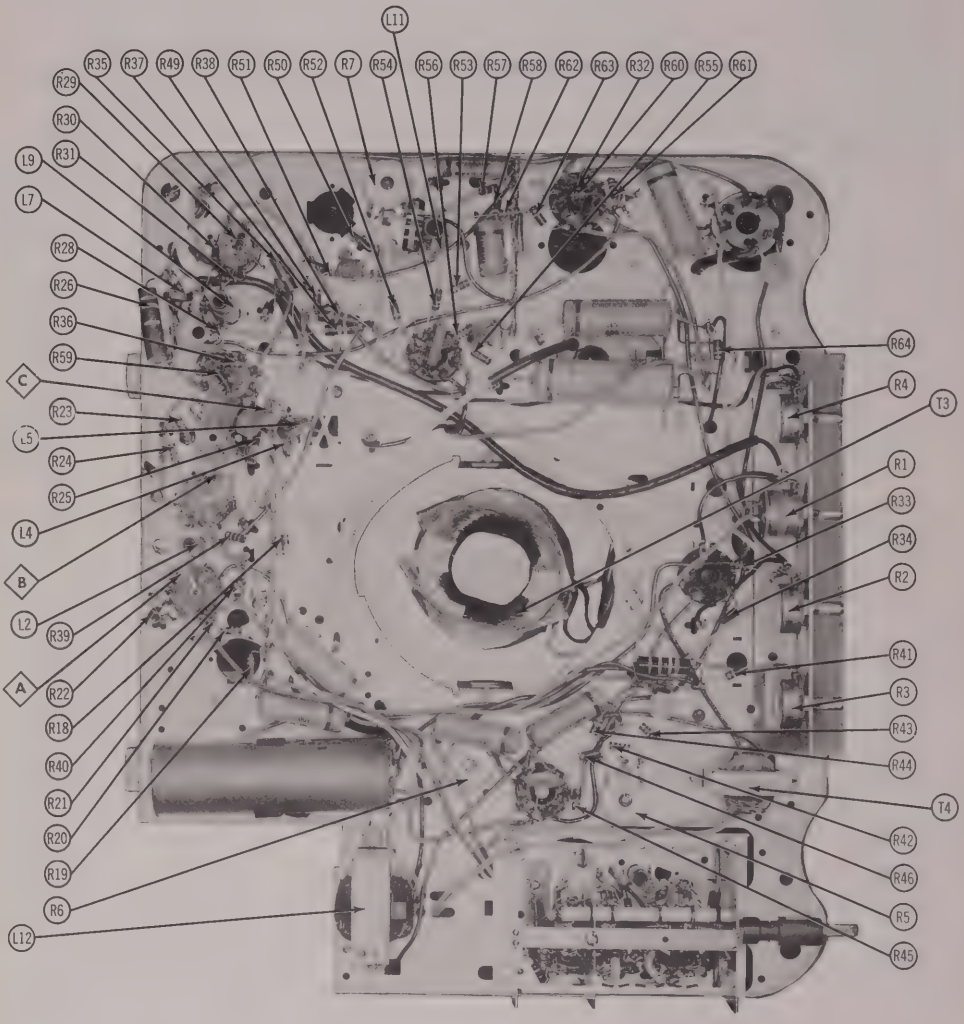
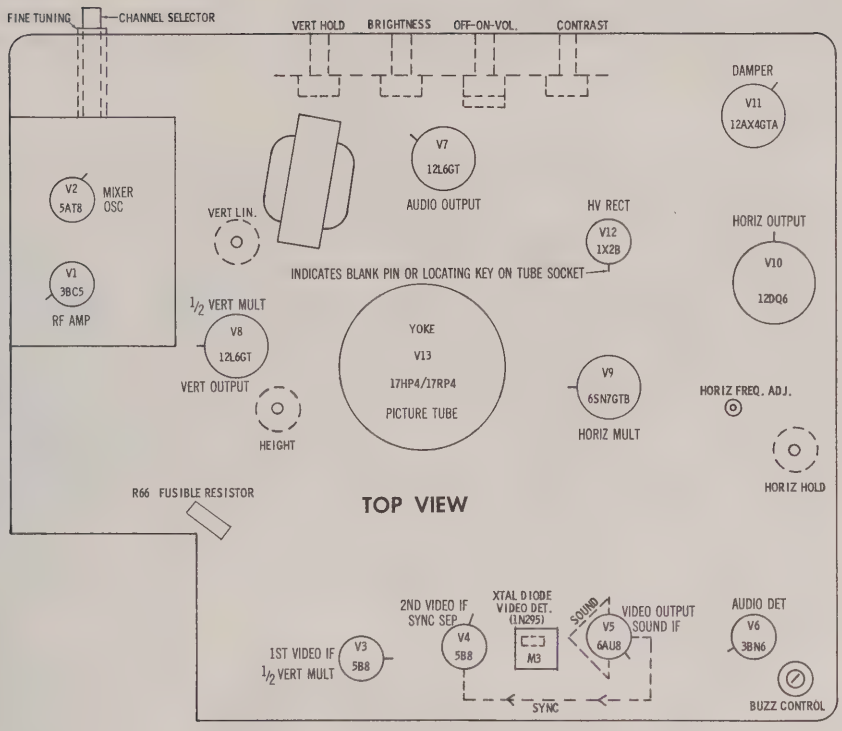


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

METEOR MODEL
4103-H (Ch.549.20035)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - Fusible Resistor (R66), Rectifier (M1)

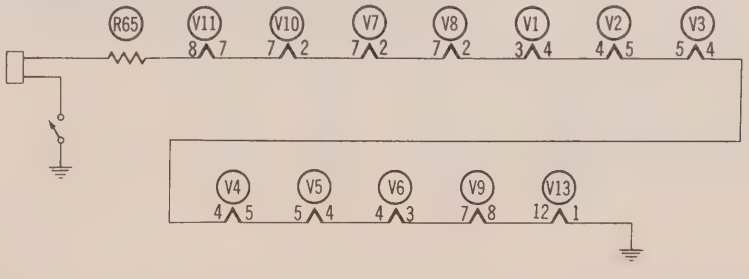
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, Diode (M3), V5
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V5, V13
Has pic, no sound - V5, V6, V7

SYNC FAILURE
No vert. sync - V4, V5, V8
No horiz. sync - V4, Diode (M2), V9
No vert. or horiz. sync - V4

SWEEP FAILURE
No raster, has sound - M2, V9, V10, V11, V12, V13
No vertical deflection - V3, V8
Poor vert. linearity or foldover - V3, V8
Poor horiz. linearity or foldover - V9, V10, V11
Narrow picture - V9, V10, V11, M1
Vert. off freq. - V4, V5, V8
Horiz. off freq. - V4, M2, V9

PROPERTY OF
L. F.
DEN

Since this receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below.)



METEOR MODEL
4103-H (Ch. 549.20035)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias battery to the ungrounded side of C42. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube.	44.25MC (10MC Swp)	42.75MC 45.75MC	Any unused channel.	Vert. amp. thru detector (Fig. 1) to point Ⓐ. Low side to chassis.	A1, A2	Adjust for response curve similar to Fig. 2 with markers properly positioned.
2.	1000MMF	High side to pin 6 (grid) of 5B8 (V3). Low side to chassis.	"	"	"	Vert. amp. thru detector (Fig. 1) to point Ⓑ. Low side to chassis.	A3, A4	"
3.	"	High side to pin 6 (grid) of 5B8 (V4). Low side to chassis.	"	"	"	Vert. amp. thru detector (Fig. 1) to point Ⓒ. Low side to chassis.	A5, A6	"
4.	"	High side to point Ⓔ. Low side to chassis.	"	"	"	"		Retouch A1 thru A6 as needed to obtain response curve on scope similar to Fig. 3.

SOUND IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set volume control for normal volume.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to pin 9 (plate) of 6AU8 (V5). Low side to chassis.	Not Used.	4.5MC (400∿ 30% AM Mod.)	Any unused channel.	Across secondary at audio output trans.	A10	Set buzz control (R8) 90° from its maximum clockwise rotation. Adjust A10 for maximum 400∿ indication on scope.
6.	"	"	"	"	"	"	A7, A8, A9	Attenuate generator output so that signal level is below limiting level of the 3BN6 as evidenced by background hiss and noise. Adjust A7, A8 and A9 for maximum 400∿ indication on scope.
7.	"	"	"	"	"	"	R8	Use high signal generator output and adjust buzz control (R8) for MINIMUM 400∿ indication on scope.
8.	"	"	4.5MC (7.5KC Swp)	4.5MC	"	"	A10	With volume control at low level, retouch A10 for maximum scope indication with marker at center of response peak. Retouch A7 and A8 for maximum response.

TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

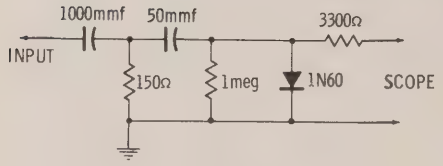


FIG. 1

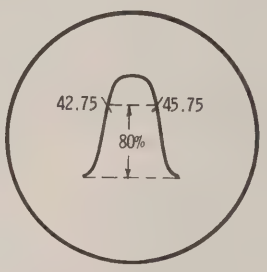


FIG. 2

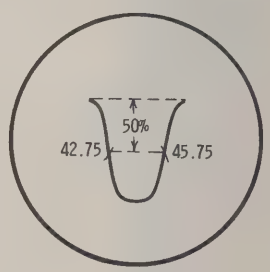
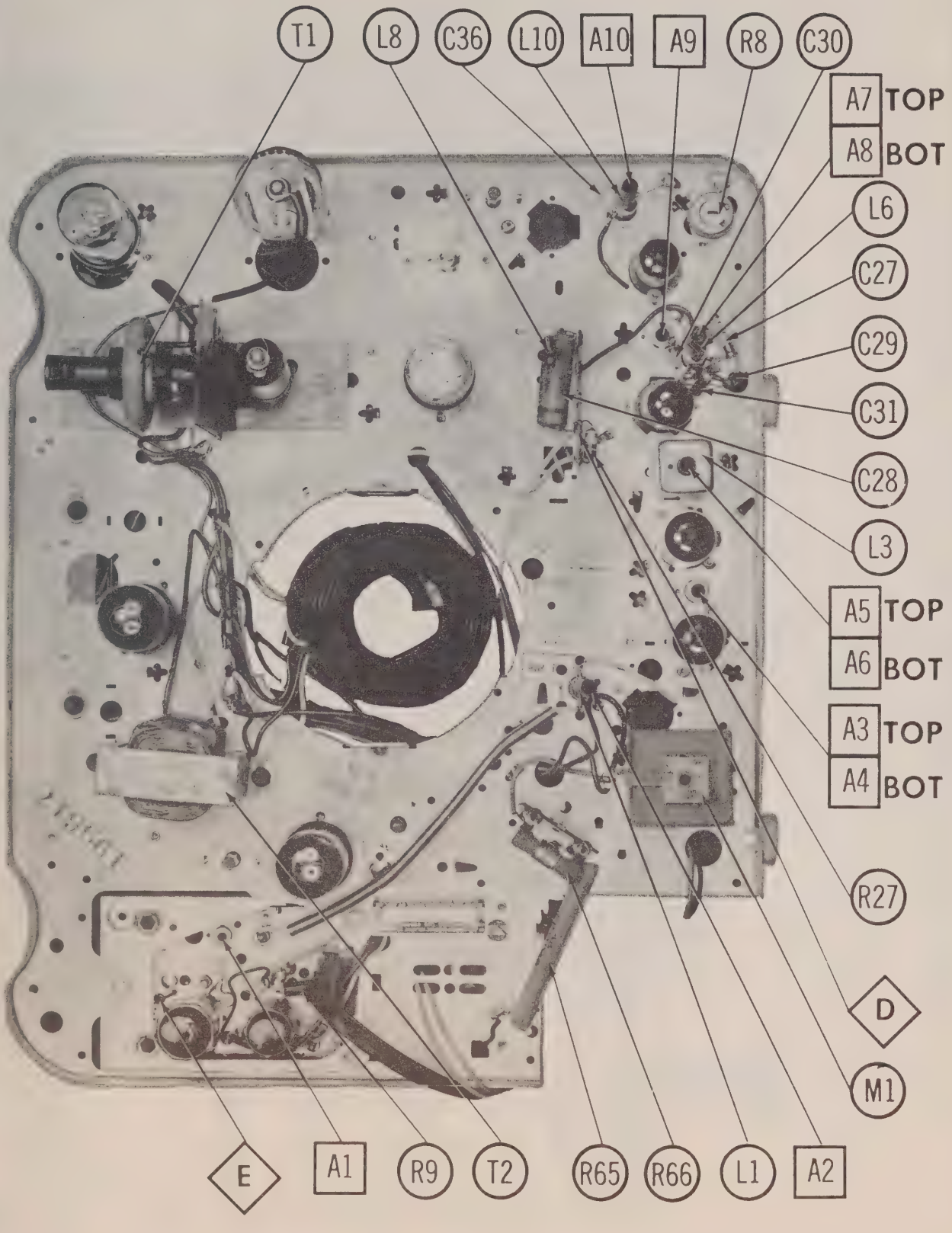
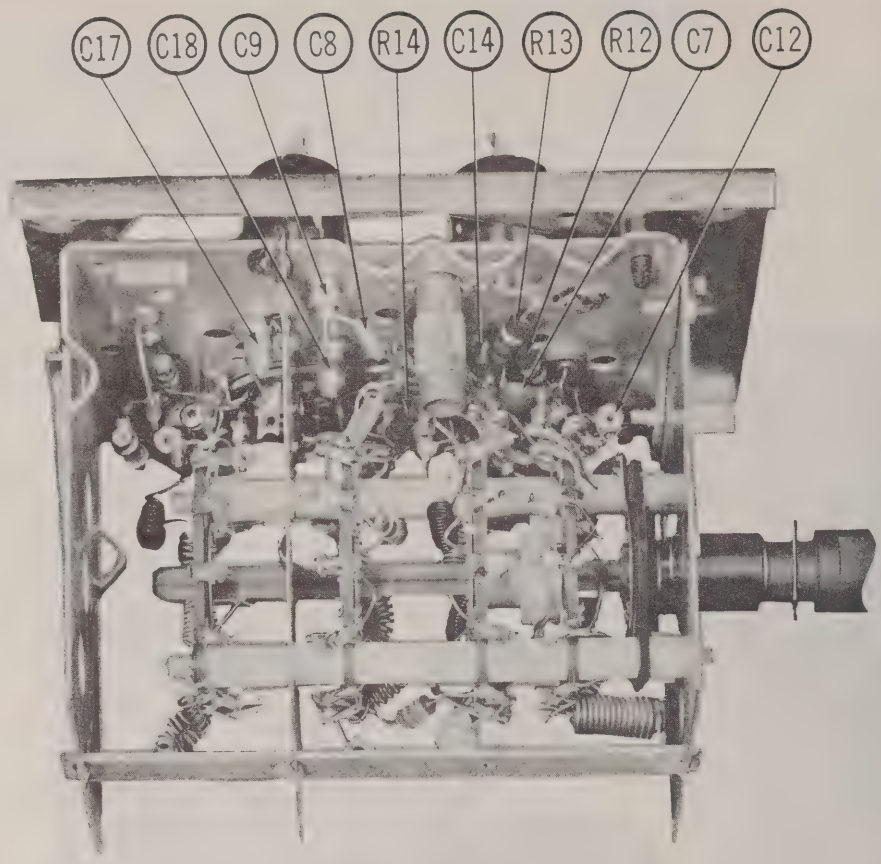


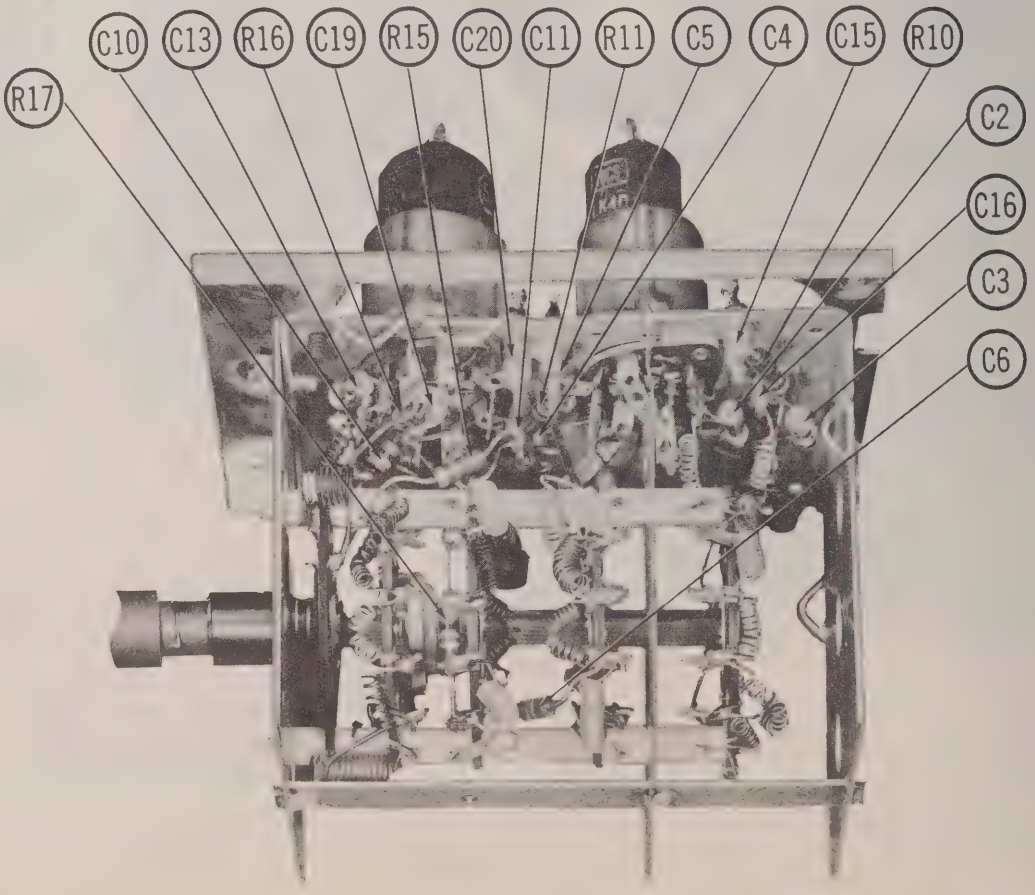
FIG. 3



CHASSIS TOP VIEW



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

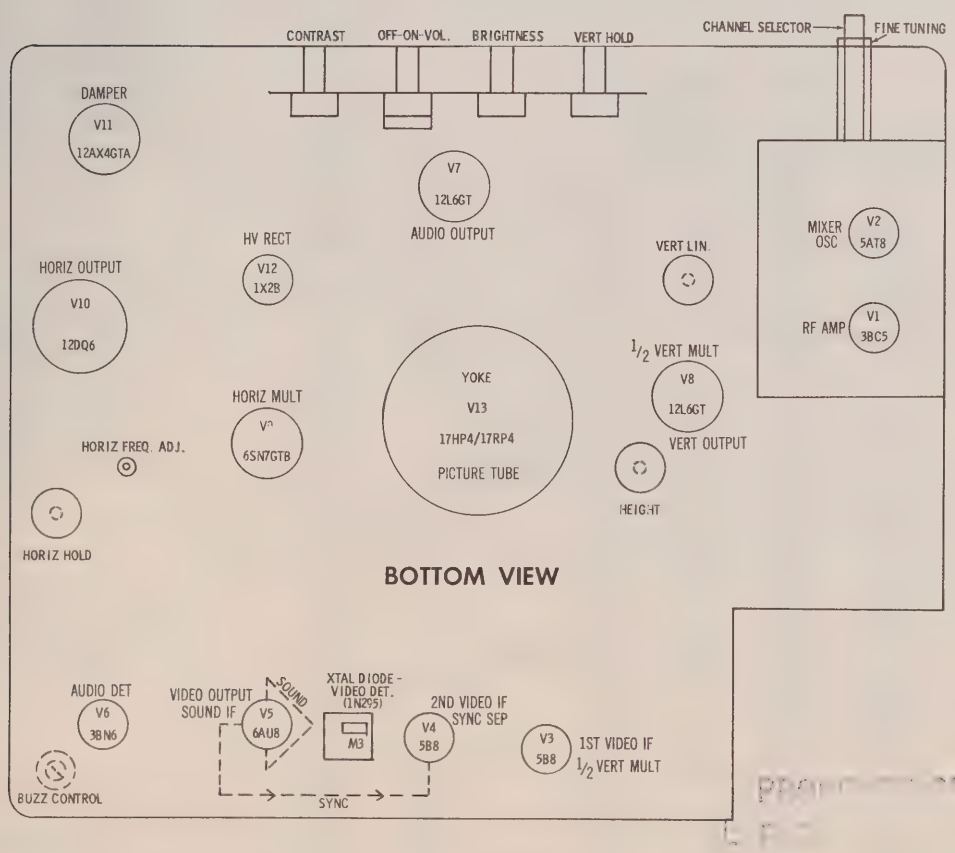
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

METEOR MODEL
4103-H (Ch. 549-20035)

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BC5	1Meg	0Ω	10Ω	11Ω	†240Ω	†240Ω	0Ω		
V2	5AT8	15K	†6000Ω	0Ω	10Ω	9Ω	†2500Ω	†700Ω	0Ω	235K
V3	5B8	0Ω	●1Meg	●†1Meg	7.5Ω	9Ω	1Meg	56Ω	†150Ω	†150Ω
V4	5B8	0Ω	2.2Meg	†20K	7.5Ω	6Ω	.1Ω	180Ω	†150Ω	†150Ω
V5	6AU8	0Ω	100K	†35K	4Ω	6Ω	●30Ω	1Meg	†22Ω	†3300Ω
V6	3BN6	●180Ω	47Ω	3Ω	4Ω	†2200Ω	5Ω	†900K		
V7	12L6GT	NC	13.5Ω	†210Ω	†18K	●230K	NC	16Ω	120Ω	
V8	12L6GT	TP	11Ω	†270Ω	†20Ω	●2.2Meg	TP	13.5Ω	0Ω	
V9	6SN7GTB	●100K	†82K	750Ω	2Meg	†15K	750Ω	3Ω	1.5Ω	
V10	12DQ6	TP	16Ω	TP	†180Ω	500K	TP	18Ω	0Ω	TOP CAP ‡11Ω
V11	12AX4GTA	NC	NC	INF	NC	†20Ω	NC	22Ω	18Ω	
V12	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡471Ω
V13	17HP4	0Ω	13Ω	*27K	‡27K	●400K	1.5Ω			

† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V11.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART

SET 348 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amp.	3BC5	
V3	Mixer - Osc.	3A72	
V3	1st Video IF Amp. - Vert. Multi	3B8	
V4	2nd Video IF Amp. - Sync Sep.	3B8	
V5	Video Output - Sound IF Amp.	6AL8	
V6	Audio Detector	3BN6	
V7	Audio Output	1J1 SGT	
V8	Vert. Multi - Vert. Output	12L8GT	
V9	Horiz. Multi.	6SN7GTB	
V10	Horiz. Output	12DQ6	
V11	Damper	12AX4GTA	
V12	HV Rectifier	1X2B	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	M5 METEOR PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.		
V13	17MP4, 17RP4	17MP4, 17RP4	17MP4/A, 17MP4	① Aluminized ② Silver Screen "SP"	
		17MP4A	17MP4A ⊥		
		17MP4B ⊥	17MP4B ⊥	17MP4B ②	

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA METEOR PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	200	150	45-355	PR3-012		WT220	CDB-T-1015	CD-095	R2215*
B	250	150						MT-1510	
C	10	150							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA METEOR PART No	AEROVOX PART No	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No	SPRAGUE PART No	NOTES
C2	6			MPO-SIL 2		C10V8C	TCO-S. 2			
C3	8			MPO-SIL 2		C10V8C	TCO-S. 2			
C4	.27									
C5	1000			EF-001	MFT-1000				503C-D1	
C6	.68				TCZ-.68		TCO-.68	ZT-5675		
C7	5.6			MPO-SIL 6	TCZ-5.6	C10V68C	TCO-5.6	ZT-5668		
C8	1000		47A230	BPD-001	BD-103	HYA6D1	RD-1000	DC53L	53K-D1	
C9	33									
C10	3			MPO-SIL 3	TCZ-3R3	C10V3C	TCO-3.3			
C11	100			EF-0001	MFT-100				503C-T1	
C12	10			MPO-SI 10	TCZ-10	C10D1C	TCO-10	ZT-561	57CC-Q2	
C13	5.6									
C14	100			EF-0001	MFT-100				503C-T1	
C15	1000			EF-001	MFT-1000				503C-D1	
C16	9									
C17	1000			EF-001	MFT-1000				503C-D1	
C18	1000			EF-001	MFT-1000				503C-D1	
C19	1000		47A230	BPD-001	BD-103	HYA6D1	RD-1000	DC53L	53K-D1	
C20	1000			EF-001	MFT-1000				503C-D1	
C21	680		47A633	BPD-00068	BD-681	HYAU7G8	RD-680	UC-5368	5GA-T68	
C22	680		47A633	BPD-00068	BD-681	HYAU7G8	RD-680	UC-5368	5GA-T68	
C23	1000		47A230	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C24	4.7		47B403-6	MPO-SIL 7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	57CC-V47	
C25	10		47CA20A100K	N750-SI 10	TCN-10	CTA6Q1D	TC7-10	NT-541	57CU-Q1	
C26	.1	150	47A243	P1S088N-1	DF-104	CUB19D1		GEM-15001	150TM-P1	
C27	68		47B479							
C28	.1	200	46A1034J	P288N-1	DF-104	CUB2P1		GEM-308	2TM-P1	
C29	10		47A180-1	BPD-00001	BD-109	CUQ2C	KD-10	UC-541	5GA-Q1	
C30	32		47B478	N080-SI 10						
C31	47		47CA20A470M	BPD-00047	DD-470	CUQ47C	KD-47	UC-5447	5GA-Q47	
C32	9		47A807	MPO-SI3		C10V3C	TCO-3	ZT-563		
C33	1000		47A230	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C34	470			1468-00047		SWS747			M5-347	
C35	1000		47A230	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C36	15		47B480	N750-SI 15	TCN-15	CTA6Q1M	TC7-15		57CU-Q15	
C37	1000		47A230	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C38	1000		47A230	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C39	10000		47A234	BPD-01	DD-103	HYA6S1	GP-10000	DC51L	5HK-S1	
C40	10000		47A234	BPD-01	DD-103	HYA6S1	GP-10000	DC51L	5HK-S1	
C41	10000		47A230	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C42	.33	200	46A72345	P288N-33		CUB2P25		GEM-3025	2TM-P25	
C43	100		47CA30A101M	N750-SI 100	TCN-100	CTA6T1D	TC7-100	NT-551	57CU-T1	
C44	.0039	400	46SB392E4	BPD-004	DD-402	CUB4D39		GEM-4339	4TM-D39	
C45	1000		47-503	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C46	3000		47A395	BPD-003	DD-302	HYA6D2	GP-3000	DC522	5HK-D3	
C47	220		47-506	BPD-0008	DE-521	HYAU7S2	RD-220	UC-5282	5GA-T22	
C48	.047	400	46A9473E	BPD-05	DF-503	CUB4S47		GEM-4167	4TM-S47	
C49	.047	400	46A9473E	BPD-05	DF-503	CUB4S47		GEM-4167	4TM-S47	
C50	10000		47-506	BPD-01	DD-103	HYA6S1	GP-10000	DC51L	5HK-S1	
C51	47		47CA40A470M	BPD-00047	DD-470	CUQ47C	KD-47	UC-5447	5GA-Q47	
C52	1000		47A230	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C53	1000		47A395	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C54	.1	150	46A243	P1S088N-1	DF-104	CUB19D1		GEM-15001	150TM-P1	
C55	.330	500	47X203B33K	1467-00033		SWT33			M5-333	
C56	.0039	400	46SB392E4	BPD-004	DD-402	CUB4D39		GEM-4339	4TM-D39	
C57	680		47X206B68K	1467-00068		SWT68			M5-368	
C58	.005	200	46A5025E	BPD-005	DD-502	CUB2D5		GEM-325	2TM-D5	
C59	820		47-508	BPD-0008	DE-821	HYAU7S2	RD-820	UC-5382	5GA-T82	
C60	68	3000	47B473	NYD-30-68	DD30-680	NYB30Q68		DC30648	30GA-Q68	
C61	.15	600	46AX154J	P688N-15		CUB6P15		GEM-6315	6TM-P15	
C62	.25	600	46AX254J	P688N-25		CUB6P25		GEM-6025	6TM-P25	
C63	68	2000	47-439	NYD-20-68	DD20-680	NYB20Q68		DC30468	20GA-Q68	Note 1
C64	.1	200	46A1034J	P288N-1	DF-104	CUB2P1		GEM-301	2TM-P1	
C65	.25	200	46A1254J	P288N-25		CUB2P25		GEM-3025	2TM-P25	
C66	1000		47A230	BPD-001	DD-103	HYA6D1	RD-1000	DC53L	5HK-D1	
C67	10000		47A234	BPD-01	DD-103	HYA6S1	GP-10000	DC51L	5HK-S1	
C68	100	500	47X20B101K	1467-0001		SWS71			M5-31	

Note 1 A 47mmf may be used in this application in some versions.

CONTROLS

ITEM No.	RATING RESIST. ANCE	RATING WATTS	REPLACEMENT DATA METEOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K	½	25SB251	B-50-S	A47-500K-S	Q13-133	TA334A	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWS-13	76-1	US-28	
R3A	1Meg	½	25SB354			Q17-141	TA56R	Brightness
B	Shaft					Not Req.	Not Req.	
R5A	1. 5Meg	½	25SB356	A2-743	A47-1.5Meg-S	Q11-138	TA185L	Vert. Hold
B	Shaft		25SB305	AE-3	FS-3	Not Req.	Not Req.	
R4A	150KΩ	½		A2-315		Q17-109	U-5	Contrast
B	Shaft			AE-3		Not Req.	Not Req.	
R8A	2Meg	½	25SB385	A2-75	A47-2Meg-S	Q11-139	PTA246L	Vert. Linearity
B	Shaft			AE-4	SB2-5	Not Req.	Not Req.	
R6A	5Meg	½	25SB396	*AB-90	*A47-4Meg-S	*Q11-141	*PTA356L	Height With 1Meg Stop.
B	Shaft			AE-10	RS-3	TQ	Not Req.	
R7A	75K	½	25SB305	AB-35	A47-75K-S	Q11-135	PTA15L	Horiz. Hold
B	Shaft			AK-4	KS3-3	Not Req.	Not Req.	
R9	500Ω	3	25A1095		39-500		FL-500	Buzz (Wire-wound)

+ Connect 1 Meg resistor in series with the right hand terminal of the control as viewed from shaft end, terminals down.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA METEOR PART No.	IRC PART No.	NOTES
R9	22K		23X2X224K	BTS-220K	
R10	2200Ω			BTS-2200	
R11	470Ω		23X2X470K	BTS-470	
R12	15K		23X2X153K	BTS-15K	
R13	220K		23X2X224K	BTS-220K	
R14	1800Ω			BTS-1800	
R15	5600Ω			BTS-5600	
R16	15K		23X2X153K	BTS-15K	
R17	10K		23X2X103K	BTS-10K	
R18	1Meg		23X2X105K	BTS-1Meg	
R19	22KΩ		23X2X223K	BTS-220	
R20	10K		23X2X103K		
R21	150Ω		23X2X151K	BTS-150	
R22	56Ω		23X2X560K	BTS-56	
R23	150Ω		23X2X151K	BTS-150	
R24	180Ω		23X2X181K	BTS-180	
R25	6800Ω		23X2X682K	BTS-680	
R26	3300Ω	2	23X2X332K	BTS-3300	
R27	130K		23X2X134K	BTS-130K	
R28	100K		23X2X104K	BTS-100K	
R29	33K		23X2X333K	BTS-33K	
R30	47Ω		23X2X479K	BTS-47	
R31	479Ω		23X2X471K	BTS-470	
R32	680K		23X2X684K	BTS-680K	
R33	18K		23X2X183K	BTS-18K	
R34	120Ω		23X2X121K	BTS-120	
R35	2200Ω	1	23X2X222K	BTA-2200	
R36	15K		23X2X153K	BTS-15K	
R37	20K 5%	1		BTA-20K 5%	

ITEM No	RATING OHMS	RATING WATT	REPLACEMENT DATA METEOR PART No.	IRC PART No.	NOTES
R38	18K	1	23X3X183K	BTA-18K	
R39	68K		23X3X683K	BTS-68K	
R40	100K		23X3X104K	BTS-100K	
R41	100K		23X3X104K	BTS-100K	
R42	470K		23X3X474K	BTS-470K	
R43	180K		23X3X184K	BTS-180K	
R44	100K		23X3X104K	BTS-100K	
R45	100K		23X3X104K	BTS-100K	
R46	1. 5Meg		23X3X155K	BTS-1. 5Meg	
R47	680Ω		23X3X681K		
R48	820Ω		23X3X821K		
R49	1Meg		23X3X105K		
R50	470Ω		23X3X473K	BTS-470K	
R51	1Meg		23X3X105K		
R52	1Meg		23X3X105K		
R53	82K		23X3X823K		
R54	33K		23X3X333K		
R55	7500 5%		23X3X75J		
R56	68K		23X3X683K		
R57	82K		23X3X823K		
R58	47500		23X3X472K		
R59	1Meg		23X3X105K		
R60	470K		23X3X474K		
R61	22K		23X3X223K		
R62	180Ω		23X3X181K	BTS-180	
R63	220K		23X3X224K	BTS-220K	
R64	27K		23X3X273K	BTS-27K	
R65	45Ω	20	24B1048	BD-50	
R66	5Ω	6	24-1072	PRS. 6	

Note 1: A 82K resistor is used in some versions.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA METEOR PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Horiz. Output Trans.	55D585								
T2	Vert. Output Trans.	55C384	Z1900 ①	A-2823 ②	V307 ③	A-5115	26972 ③	A-108X ③		
T3A	Yoke(T3) Horiz(21M8)	53C377	DF605 ④ ⑤	MDF-7X3	22ZD1 ③ ⑤	TYF35/43	DY-11A ④ ⑤	Y-10 ④	Y-13-L ⑤	
B	Vert(42. 5M8)	53-377 ③								

① Use T to 1 turns ratio.
② Drill new mounting hole(s).
③ Alternate Meteor part number.
④ Use original yoke damping network if necessary.
⑤ Connect capacitor C63 across horiz. yoke terms 61 and 63.
⑥ Remove capacitor from horiz. yoke terms.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC	REPLACEMENT DATA METEOR PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	2250Ω	3-4Ω	55C291 ①	21D1	A-3025	A-3323	26858 ②	S-12X	① Alternate part #55-248. ② Drill one new mtg. hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA METEOR PART No.	REPLACEMENT DATA OHAM PART No.	NOTES
SP1	4"	PM	3-4Ω	85C175A	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA METEOR PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	1st Video IF	51-3124		TY-131	6235	
L2	2nd Video IF	51-3105				
L3	3rd Video IF	50-388				
L4	RF Choke	53A307	19-1006		4634	18 Microhenries
L5	Shunt Peaking Coil	51-3103	19-1000		6349	750 Microhenries
L6A	4. 5MC Trap	51B-1006				
B	1st Sound IF					
L7	Shunt Peaking Coil	51-3101	19-6400A		6134a	300 Microhenries; Wound on 39000 resistor.
L8	Series Peaking Coil	51-3100	19-3180*	TY-184*	6180*	185 Microhenries; Wound on 47K resistor.
L9	2nd Sound IF	51-3103				
L10	Quadrature Coil	51A1857			1480	

+ Parallel with 39000 resistor.
* Parallel with 47K resistor

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA METEOR PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	NOTES
L11	47Ω		51B2109	19-1576		6210			88-5	17-42 Millihenries

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE 10 CURRENT (000 Cy.)	REPLACEMENT DATA METEOR PART No.	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
L12	230A	21. 5Ω	. 5HY	56B224	C5040	C-2994	C-2327	28C41	C-25X

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	METEOR PART No	REPLACEMENT DATA	
X1	Sync Coupler	270MMF, 10000MMF, 25MMF, 330K, 2. 2Meg	49A046	Aerovox Centralab Sprague	PA533 PC263 8T-3

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA METEOR PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	. 230A	27A218	1590A	R230SSI.	SS300	8Q4	300	

SELENIUM DIODE

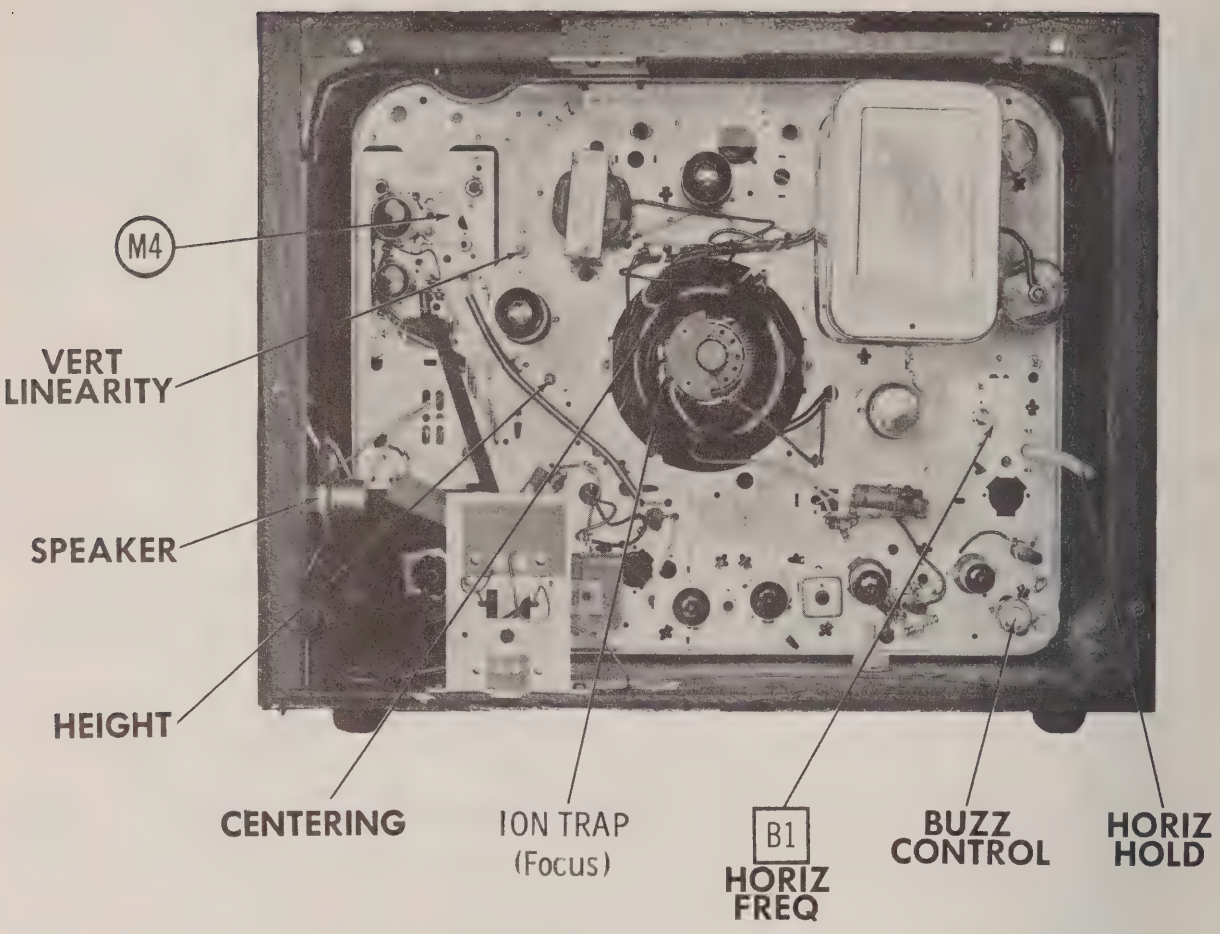
ITEM No.	RATING CURRENT	REPLACEMENT DATA METEOR PART No	FEDERAL PART No	INTERNATIONAL PART No.	MALLORY PART No	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M2		27-238		ITI ①				Horiz. Phase Det. (Pigtail) ① 3 Required.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA METEOR PART No.	SYLVANIA PART No.	NOTES
M3	CK-708A	19C1864	1N60	Video Det. (Pigtail)

MISCELLANEOUS

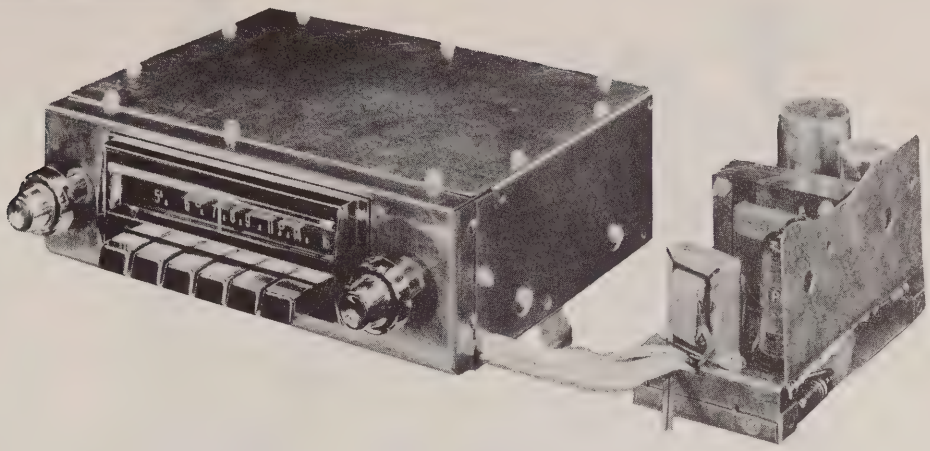
ITEM No.	PART NAME	METEOR PART No	NOTES
M4	Tuner	12D819	VHF 12 Position.
M5	Centering Device	213216	
M6	Ion Trap	21B188	
	Cabinet	78-1364	
	Knob	15-995	Channel Selector
	Knob	15C775	4 Required
	Knob	15D782	Fine Tuning
	Safety Glass	22C423	
	Mask	7-574	



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. If the horizontal hold control fails to maintain sync, set it in the mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. Check other channels and if necessary, readjust B1 SLIGHTLY for best sync on all channels.



MOPAR MODELS 840 (P5606), 844 (C5609), 844HR(C5609HR)

TRADE NAME	Mopar Models 840 (P-5606), 844 (C-5609), 844HR (C-5609HR) Codes 121, 122
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated AM Automobile Receiver
TUBES (Eight)	Types 12BA6 RF Amplifier, 12AU6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 12AV6 Phase Inverter, (2) 12AQ5 Output, 12X4 Rectifier
POWER SUPPLY	12 Volt Storage Battery — RATING 3.9 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540KC-1605KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver.
Tone control to mid-range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (grid) of 12AU6 (V2). Low side to chassis.	265KC (400∿Mod)	Extreme high freq. end of dial	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle	1605KC	1605KC	"	A5	"
3.	"	"	1400KC	1400KC	"	A6, A7	"
	The following steps are not necessary unless Osc., RF or Antenna core or coil has been replaced.						
4.	Fig. 1	Thru dummy to antenna receptacle	1605KC	1605KC	"	A5, A6, A7	With A6 (osc. core) out of coil, but still in coil form, adjust A5, A6 and A7 for maximum output.
5.	"	"	1000KC	1000KC	"	A8	Adjust for maximum output.
6.	"	"	1605KC	1605KC	"	A6	With A9 (RF core) out of coil, but still in coil form, adjust A6 for maximum output.
7.	"	"	1000KC	1000KC	"	A9	Adjust for maximum output.
8.	"	"	1605KC	1605KC	"	A7	With A10 (ant. core) out of coil, but still in coil form adjust A7 for maximum output.
9.	"	"	1000KC	1000KC	"	A10	Adjust for maximum output.

With receiver installed in car and antenna fully extended , tune to weak station near 1400KC, adjust A7 for maximum volume.

PUSHBUTTON ADJUSTMENT

1. Turn on receiver and allow fifteen minute warm-up period. Antenna should be fully extended.
2. Unlock pushbutton by pulling out.
3. Tune to desired station manually.
4. Lock pushbutton to that station by pushing in firmly.
5. Repeat above procedure on remaining pushbuttons.

FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12AU6	
V3	IF Amplifier	12BA6	
V4	Det. -AVC-AF Amplifier	12AV6	
V5	Phase Inverter	12AV6	
V6	Output	12AQ6	
V7	Output	12AQ5	
V8	Rectifier	12X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■20	350	61-0086A	AFH3-106	CO960	FP333.6	TMT-91	T-465	TVL-3634
B	▲10	350							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	200	30-4650-45	BPD-05	DF-503	CUB2S47		GEM-4147	2TM-S47	
C3	.047	200	30-4650-45	BPD-05	DF-503	CUB2S47		GEM-4147	2TM-S47	
C4	4.7		30-1221-13	NP0-SI 4.7	TCZ-4R7	TZ07	TCO-4.7	ZT-5547	5TCCB-V47	
C5	15		62-015409011	NP0-SI 15	TCZ-15	TZ11	TCO-15		5TCC-Q15	
C6	220		62-122001001	SI 220	D6-221	TP39	GP-220	UC-5322	5GA-T22	Note 1
C7	250									Note 2
C8	5000		30-1238-1	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C9	220		62-122001001	SI 220	D6-221	TP39	GP-220	UC-5322	5GA-T22	
C10	10000		30-1238-2	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C11	.1	100	30-4650-47	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C12	.25	100	30-4650-49	P288N-25		CUB2P25		GEM-2025	2TM-P25	
C13	10000		30-1238-2	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C14	10000		30-1238-2	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C15	.0068	1000	30-4650-91	P1088N-0068	DD16-702	CUB16D68		GEM-10268	10TM-D68	Note 3
C16	.033	1000	30-4650-95	P1088N-033		CUB16S3		GEM-10133	10TM-S3	
C17	.5	100	61-0183	VHC36		ST2P5		RF480	68P20	
C18	330		62-133001001	SI 330	D6-331	TP43	GP-330	UC-5333	5GA-T33	
C19	.5	100	61-0183	VHC36		ST2P5		RF480	68P20	

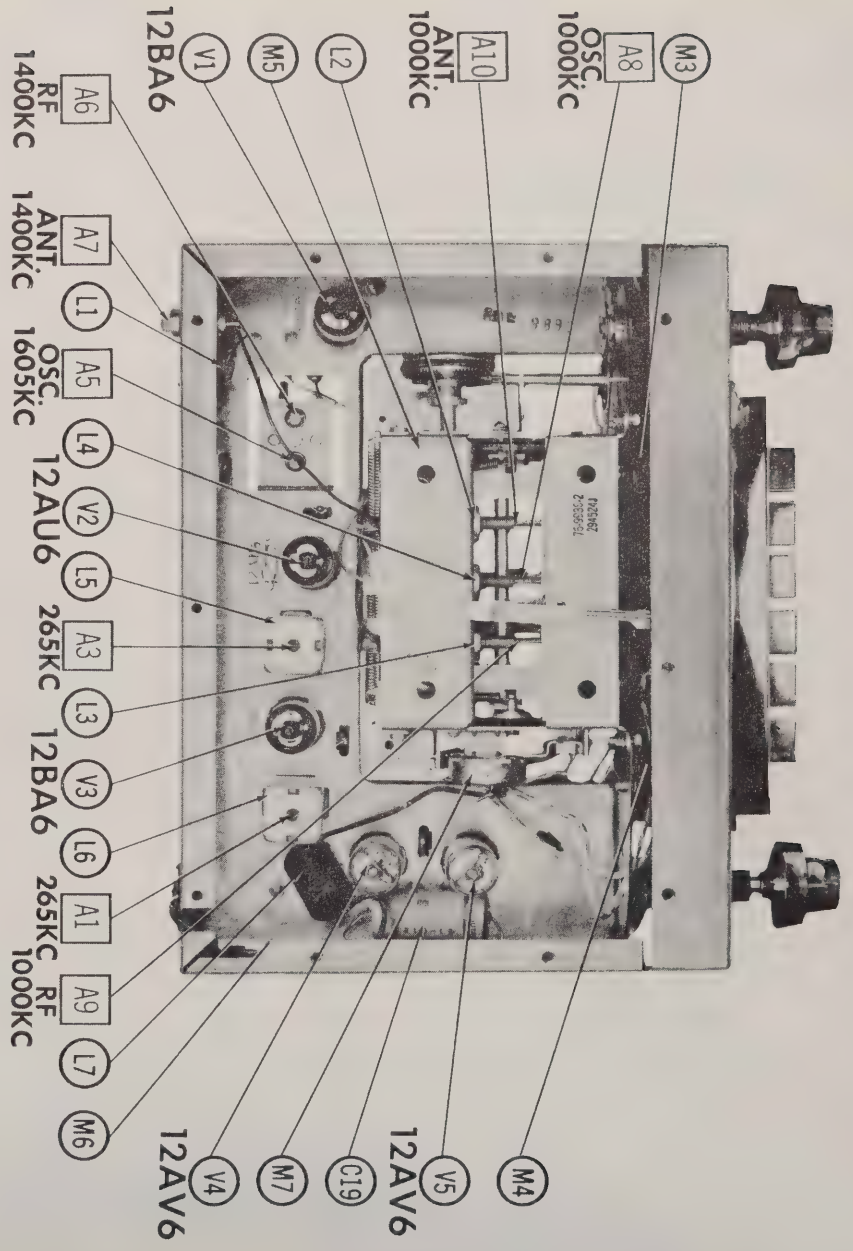
Note 1. In chassis coded 12l, C6 is 200MMF and is part of RF-Osc. trimmer unit.
Note 2. Some versions may use 245MMF in this application (part #30-1224-129).
Note 3. Model 844HR uses .001MFD in this application (part #30-4650-52).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	4Meg *	1/2	33-5557-15	F1-83		QJ-801A	UF106L	Tone (Note 1)
B	350K	1/2		R2-35		Not Req.	UR354A	Volume
C	Bushing			AK-27		Not Req.	EB214	
R2	25Ω	2	33-5576-1					Fader - wire wound-rear speaker

* Open in center.
Note 1. Alternate part #33-5580 used in Model 844. Part #33-5580-4 used in Model 840. Part #33-5580-6 (R1B - 2Meg) used in Model 844HR.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R3	15K		66-3158340	BTS-15K	
R4	68Ω		66-0688340	BTS-68	
R5	18K		66-3188340	BTS-18K	
R6	100K		66-4108340	BTS-100K	
R7	1Meg		66-5108340	BTS-1Meg	
R8	47K	1	66-3474340	BTA-47K	Note 1
R9	470K		66-3478340	BTS-470K	Note 3
R10	220Ω		66-1228340	BTS-220	
R11	47K		66-3478340	BTS-47K	Note 4
R12	10Meg		66-6108340	BTS-10Meg	
R13	180Ω		66-1188340	BTS-180	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R14	220K		66-4228340	BTS-220K	
R15	220K		66-4228340	BTS-220K	
R16	220K		66-4228340	BTS-220K	
R17	220K		66-4228340	BTS-220K	
R18	10K		66-4108340	BTS-10K	
R19	2200Ω		66-2228340	BTS-2200	
R20	10K		66-2105340	BTS-10K	Note 3
R21	330Ω	1	66-1338430	BTA-330	
R22	2200Ω		66-2228340	BTS-2200	
R23	1000Ω	1	66-2104340	BTA-1000	Note 2
R24	220Ω	1	66-1224340	BTA-220	
R25	220Ω	1	66-1224340	BTA-220	

Note 1. 47K, 2W used in Model 844HR only (part #66-3475340).
Note 2. 1000, 2W used in Model 844HR only (part #66-2105340).
Note 3. Used in Model 844HR only.
Note 4. R8 ispart of printed circuit in code 122.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	12.6VCT @2.4A	560VCT .063A			32-8592-1	V3903	P-3068	P-6494	22R52	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6200Ω	3-4Ω	32-8316-10	Z1004	A-2900	A-3850	22S47	S-51X	

SPEAKER

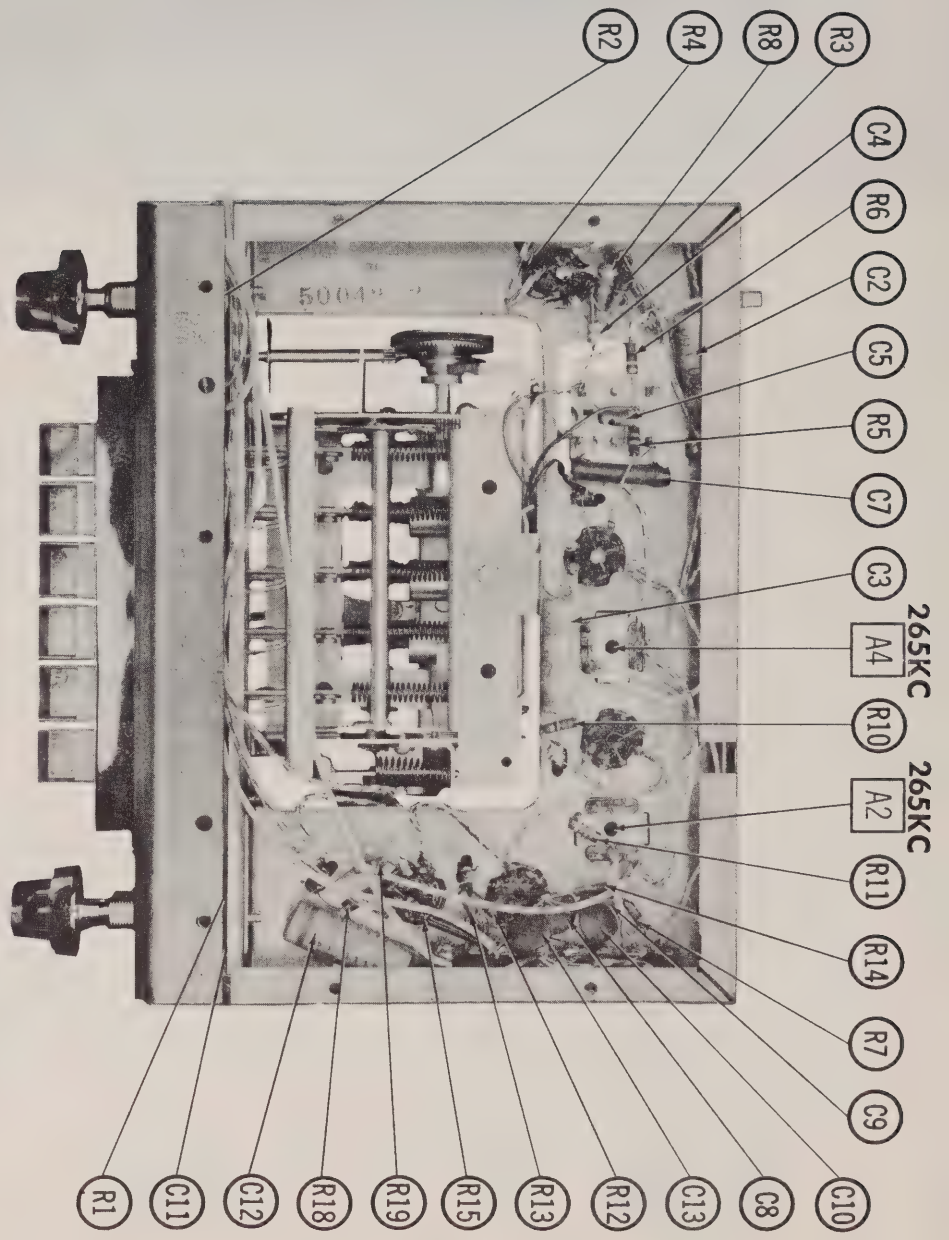
ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	7"	PM	3-4Ω	36-1632-8	7A31	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Loading Coil	32-4422-24				5.6 Microhenries, IRC part #CL-1
L2	Ant. Coil	32-4641-1				Note 1
L3	RF Coil	32-4641				Note 2
L4	Osc Coil	32-4641-3				Note 3
L5	Input IF	32-4160-18A				Note 4
L6	Output IF	32-4240-12A				Note 5
L7	Fil. Choke	32-1374-5				
L8	Vib. Hash Choke	32-4170-4				

Note 1. Part #32-4641-1 used in tuners #76-9936, -2, 76-9805, -1.
Part #32-4648-1 used in tuners #76-9936-1, -3, 76-9805-2, -3.
Note 2. Part #32-4641 used in tuners #76-9936, -2, 76-9805, -1.
Part #32-4648 used in tuners #76-9936-1, -3, 76-9805-2, -3.
Note 3. Part #32-4641-3 used in tuners #76-9936, -2, 76-9805, -1.
Part #32-4650 used in tuners #76-9936-1, -3, 76-9805-2, -3.
Note 4. Part #32-4583-7 used in chassis code 122.
Note 5. Part #32-4584-2 used in chassis code 122.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				PHILCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6V	115∿	41-2054	6330	G883	6330	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	9A	*	41-3910-10	307009. (SFE 9A)	155009	SFE9	HRH

* Part #AD-2243-7 (7.5A) used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3	Dial Light	34-2031-10	#1892
M4	Dial Light	34-2031-10	#1892
M5	Tuner	76-9936-2 *	Permeability (complete) used in Models 844, 840 and 844HR (Code 121). Includes L2, L3, and L4.
	Tuner	76-9805 †	Permeability (complete) used in Models 844, 840 and 844HR (Code 122). Includes L2, L3 and L4.
M6	Spark Plate	30-1254	12.6V power input lead.
M7	Switch	42-2044 ▲	On-off - used with tuner part numbers 76-9936, 76-9936-2, 76-9805, 76-9805-1
M8	Trimmer Cap.	31-6522-7 ■	Dual: Osc. (A5), RF (A6) Used in Models with chassis Code 121
M9	Padder Cap.	31-6502-6	Antenna (A7)
	Knob	28-10341	Tone and fader, Model 840
	Knob	28-10342	Tone and fader, Model 844
	Knob	27-4687-22	Tuning & volume , Model 840
	Knob	27-4687-23	Tuning & volume, Model 844
	Pushbutton	54-6176	5 used. Model 840. (Note 1)
	Pushbutton	54-6176-1	"Off". Model 840. (Note 1)
	Pushbutton	28-10338-1	5 used. Model 844 (Note 1)
	Pushbutton	28-10338-2	"Off". Model 844 (Note 1)
	Pushbutton	56-6184	5 used. Model 840 (Note 2)
	Pushbutton	54-6184-1	"Off". Model 840 (Note 2)
	Pushbutton	28-10594	5 used. Model 844 (Note 2)
	Pushbutton	28-10594-1	"Off" Model 844 (Note 2)
	Dial Scale	28-10333	Model 840
	Dial Scale	54-9351	Model 844

* The following are a list of alternate tuner part numbers that may be used in some versions of models 844, 840 and 844HR (Code 121): 76-9936, 76-9936-1, 76-9936-3.

† The following are a list of alternate tuner part numbers that may be used in some versions of models 844, 840 and 844HR (Code 122): 76-9805-1, 76-9805-2, 76-9805-3.

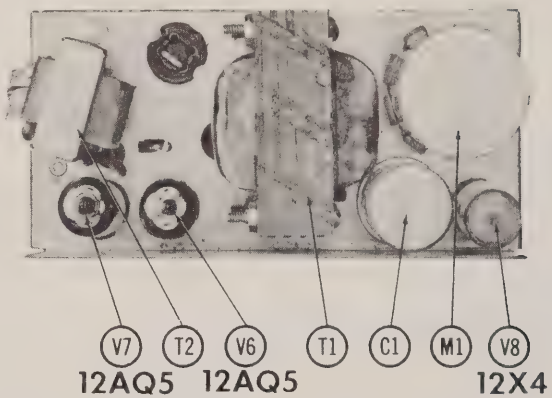
▲ Switch part #42-2046 used with tuners 76-9936-1, 76-9936-3, 76-9805-2, 76-9805-3.

■ Chassis code 122 uses two single trimmer capacitors: Osc. trimmer (part #31-6532) and RF trimmer (part #31-6532).

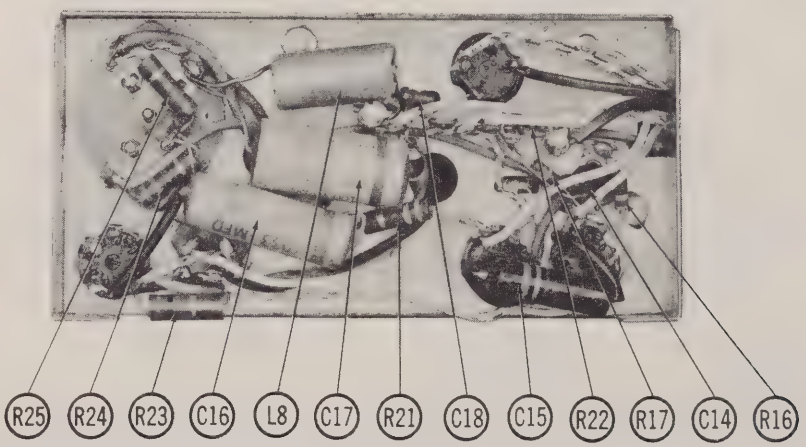
Note 1. Used with tuner part numbers 76-9936, 76-9936-2, 76-9805, 76-9805-1.

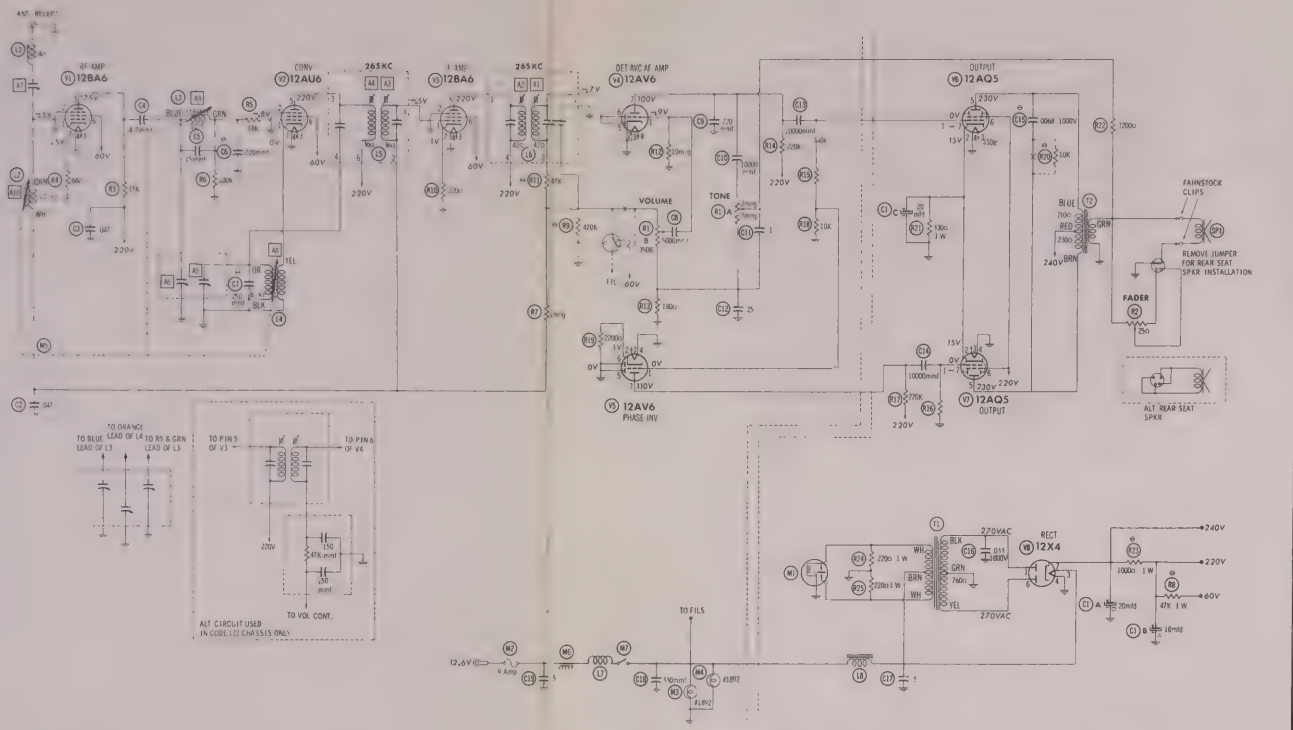
Note 2. Used with tuner part numbers 76-9936-1, 76-9936-3, 76-9805-2, 76-9805-3.

POWER SUPPLY - TOP VIEW



POWER SUPPLY - BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12 volts for voltage readings.
5. Nominal tolerance on components values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	1.3Meg	0Ω	1.1Ω	0Ω	†16K	†48K	68Ω
V2	12AU6	118K	0Ω	1.1Ω	0Ω	†1000Ω	†48K	8Ω
V3	12BA6	1.3Meg	0Ω	1.1Ω	0Ω	†1000Ω	†48K	220Ω
V4	12AV6	10Meg	0Ω	0Ω	1.1Ω	40K	420K	†221K
V5	12AV6	10K	2200Ω	1.1Ω	0Ω	0Ω	0Ω	†220K
V6	12AQ5	230K	330Ω	1.1Ω	0Ω	†210Ω	†1000Ω	230K
V7	12AQ5	220K	330Ω	1.1Ω	0Ω	† 230Ω	†1000Ω	220K
V8	12X4	360Ω	NC	1.1Ω	0Ω	NC	360Ω	50K

† MEASURED FROM PIN 7 OF V8.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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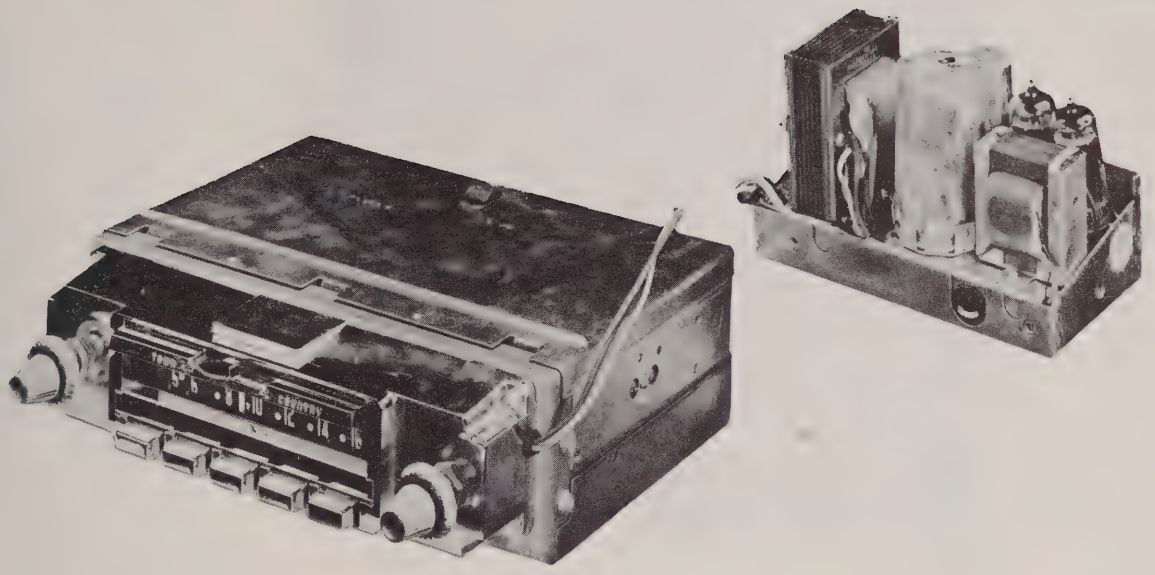
MOPAR
MODELS 910, 910HR, 911



MOPAR
MODELS 910, 910HR, 911

TRADE NAME	Mopar Models 910, 910HR (D62, D63 Dodge), 911 (S23, S24 Desoto)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Manual and Signal Seeking Tuning
TUBES (Nine)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AF Amp., 12AV6 Phase Inv.-AVC, (2) 12AB5 Output, 12AU7 Trigger, 12X4 Rectifier
POWER SUPPLY	12 Volt Storage Battery RATING 4.1 Amp. @ 12.6 Volts DC
TUNING RANGE - BROADCAST	540KC-1610KC

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	
V4	Detector-AF Amplifier	12AV6	
V5	Phase Inv.-AVC	12AV6	

ITEM No.	USE	TYPE	NOTES
V6	Output	12AB5	
V7	Output	12AB5	
V8	Trigger	12AU7	
V9	Rectifier	12X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■20	350	23A532094	AFH3-107	CO800	FP329.5	TMT-92	T-470	TVL-3635
B	▲20	350							
C	20	350							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	47		21R114164	NP0-SI 47	TCZ-47	TZ22	TCO-47	ZT-5447	5TCC-Q47	
C3	.05	200	8R121005	BPD-05	DF-503	CUB2S5		GEM-215	2TM-S5	
C4	.05	200	8R121005	BPD-05	DF-503	CUB2S5		GEM-215	2TM-S5	
C5	.1	200	8R121573	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C6	.1	400	8R121006	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C7	39	500	21R118282	NP0-SI 39	TCZ-39	22R5Q39	TCO-39		MS-439	
C8	260									Note 1
C9	100		21R400537	N750-DI 100	TCN-100	N042	TC7-100	NT-531	5TCU-T1	
C10	100		21R120577	N750-SI 100	TCN-100	TN22	TC7-100	NT-531	5TCU-T1	
C11	5000		21R115312	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C12	470		21R114554	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C13	.01	400	8R121002	BPD-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C14	.1	200	8R121573	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C15	.25	100	8K122045	P288N-25		CUB2P25		GEM-2025	2TM-P25	
C16	.01	400	8R121002	BPD-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C17	5000		21R115312	BPD-005	DD-502	K080	ED-005	DC525	5HK-D5	
C18	470		21R114554	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C19	.01	400	8R121002	BPD-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C20	.002	600	8R121568	BPD-002	D6-202	CUB6D2	GP-2000	GEM-622	6TM-D2	
C21	.04	1000	8A121549	P1088N-04		CUB16S4			MB-S4	
C22	.5	100	8K122076	VHC36		ST2P5		RF480	68P20	
C23	.5	100	8K122076	VHC36		ST2P5		RF480	68P20	
C24	.5	100	8K122076	VHC36		ST2P5		RF480	68P20	

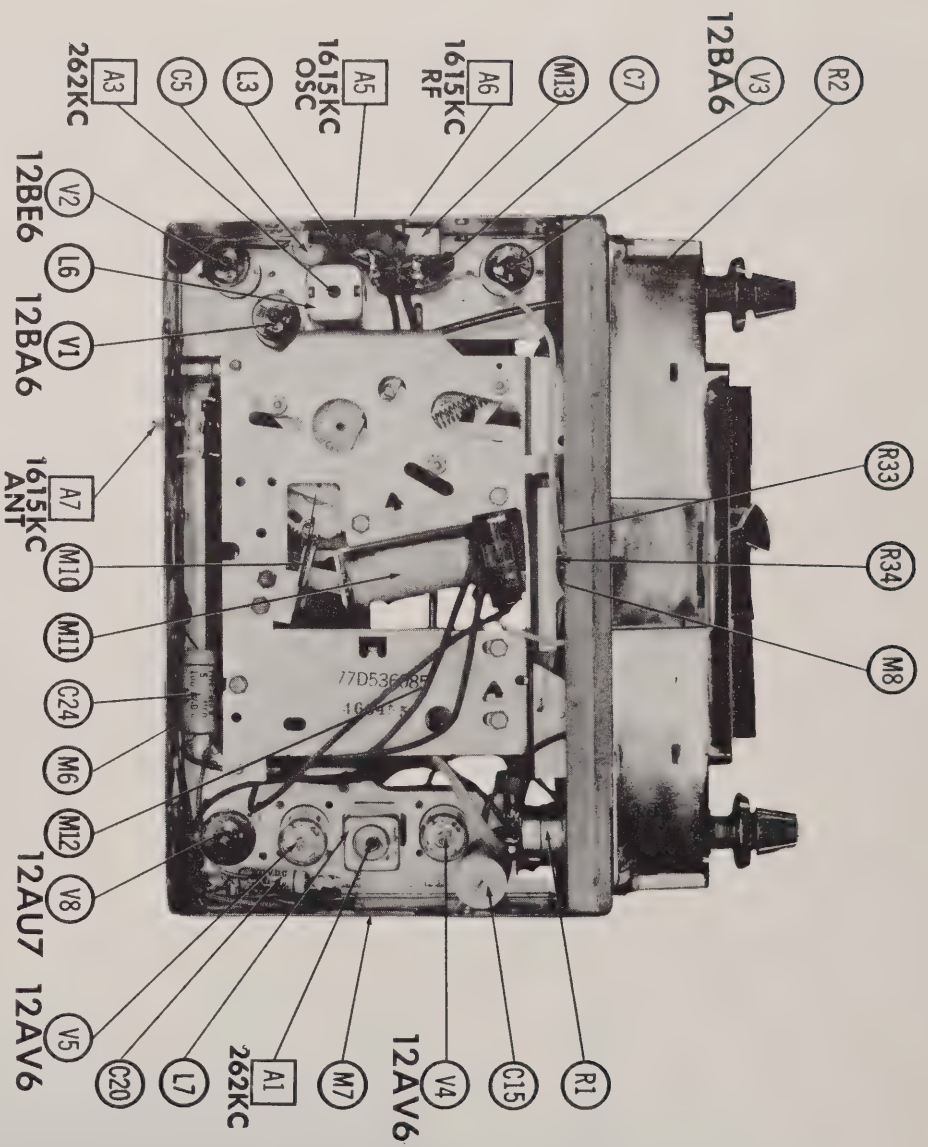
Note 1. Some versions use 250MMF in this application (part #21K536275).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	4Meg*	1/2	18K532955		RTV-602C			Tone (Note 1)
B	1.5Meg							Volume
C	Switch							
R2	25Ω	2	18B532919					Rear Seat Speaker

* Open in center.
Note 1. Part #18B532633 used in Model 911.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R3	2.2Meg		6R3927	BTS-2.2Meg	
R4	10K	1	6R6430	BTA-10K	
R5	68Ω		6R2039	BTS-68	
R6	330K		6R6014	BTS-330K	
R7	47K		6R6056	BTS-47K	
R8	1.5Meg		6R6460	BTS-1.5Meg	
R9	12K	4	17K737688	1 3/4A10-12K	
R10	270Ω		6R6432	BTS-270	
R11	180Ω		6R5660	BTS-180	
R12	100K		6R6075	BTS-100K	
R13	6.8Meg		6R3987	BTS-6.8Meg	
R14	220K		6R6015	BTS-220K	
R15	6.8Meg		6R3987	BTS-6.8Meg	
R16	56K	1	6R6402	BTA-56K	
R17	220K		6R6015	BTS-220K	
R18	1800Ω		6R2089	BTS-1800	
R19	2200Ω		6R6069	BTS-2200	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R20	470K		6R6377	BTS-470K	
R21	470K		6R6377	BTS-470K	
R22	220K		6R6015	BTS-220K	
R23	330Ω	1	6R6254	BTA-330	
R24	1Meg		6R6046	BTS-1Meg	
R25	1.5Meg		6R6460	BTS-1.5Meg	
R26	5.6Meg		6R3988	BTS-5.6Meg	
R27	560Ω		6R6291	BTS-560	
R28	4700Ω	1	6R5576	BTA-4700	
R29	47K	1	6R6462	BTA-47K	
R30	120K		6R5631	BTS-120K	
R31	47K	1	6R6462	BTA-47K	
R32	10K	1	6R6430	BTA-10K	
R33	2200Ω		6R6290	BTS-2200	
R34	390Ω		6R5554	BTS-390	
R35	2200Ω	1	6A533220	BTA-2200	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	12.6VCT @2.1A	540VCT @.069A			25C535794			P-6493	22R52 ①	

① Fabricate mounting.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6400Ω	3-4Ω	25B533038	Z1004 ①	A-2900 ①	A-3856 ①	22S47 ①	S-51X ①	①Fabricate mounting.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6" x 9"	PM	3-4Ω	50C533219	69A3	① Alternate speaker
	6" x 9"	PM	3-4Ω	50C533214 ①	69A3	

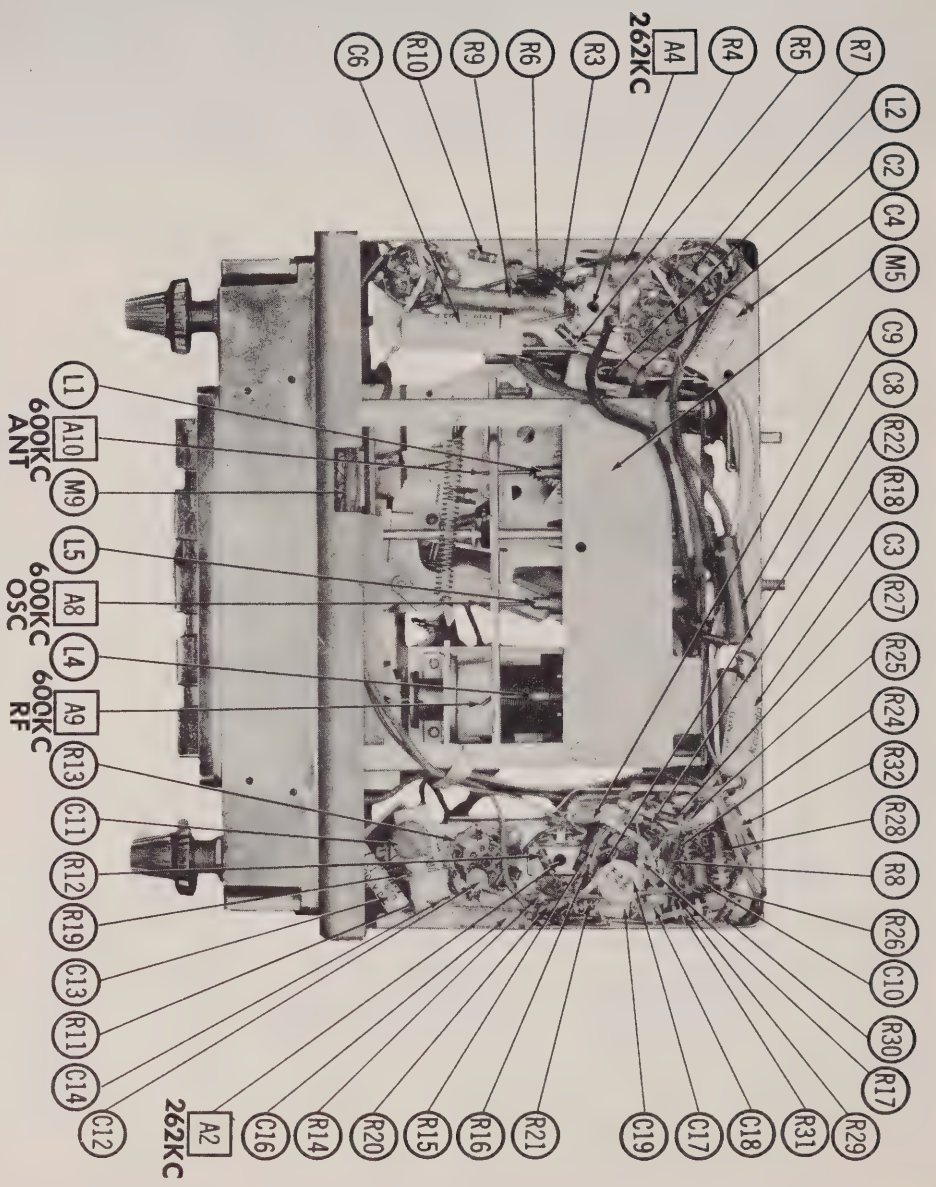
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	24K533895				Core part #76K533886
L2	Ant. Loading Coil	24A532148	19-6033			31 Microhenries
L3	IF Trap	24B532979	19-4201		6154	207 Microhenries
L4	RF Coil	24K533895				Core part #76K533886
L5	Osc. Coil	24K533897				Core part # 76K533886
L6	Input IF	24B580193	16-6752	BC-350	12-H1	
L7	Output IF	24B533073				
L8	Vib. Hash Choke	24A534494				21.2 Microhenries

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6V	115∿	48B522000	6301	G859	6301	

CHASSIS—BOTTOM VIEW



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
	Place a .070" feeler gauge against high frequency stop and manually tune receiver until planetary arm is against gauge. Remove gauge.						
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	262KC (400∿Mod)	See Note Above	DC probe to point Ⓐ. Common to chassis.	A2, A3, A4	Adjust for maximum deflection.
2.	"	"	"	"	"	A1	Back tuner cores (A8, A9, A10) completely out of coils. Readjust A8 so that core is 1 25/32" from mounting end of coil form. See Fig. 2 for core alignment tools. Adjust A1 for MINIMUM deflection.
3.	Fig. 1	Thru dummy to antenna receptacle.	1615KC	"	"	A5, A6, A7	Adjust for maximum deflection.
4.	"	"	600KC	600KC	"	A9, A10	"
5.	"	"	1615KC	1615KC	"	A6, A7	Adjust for maximum deflection. Repeat steps 4 and 5 and cement cores (A8, A9, A10) in place.
	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum volume.						

POINTER CALIBRATION ADJUSTMENT

Tune to 1000KC signal and adjust pointer screw until pointer reads 1000KC on dial.

PUSHBUTTON ADJUSTMENT

1. Turn receiver on and allow fifteen minute warm-up period. Antenna should be fully extended.
2. Open the hinged tab cover below dial, exposing 5 red pushbutton setting tabs.
3. Starting at left end of dial, tune in manually first desired station and move first pushbutton setting tab until it lines up with dial pointer tip.
4. Repeat step 3 for remaining pushbutton setting tabs.

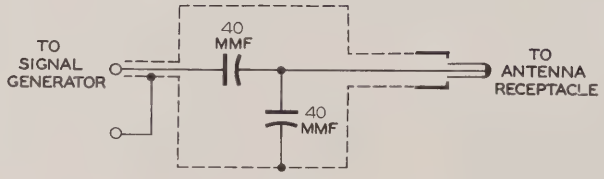


FIG. 1

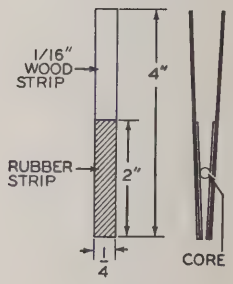
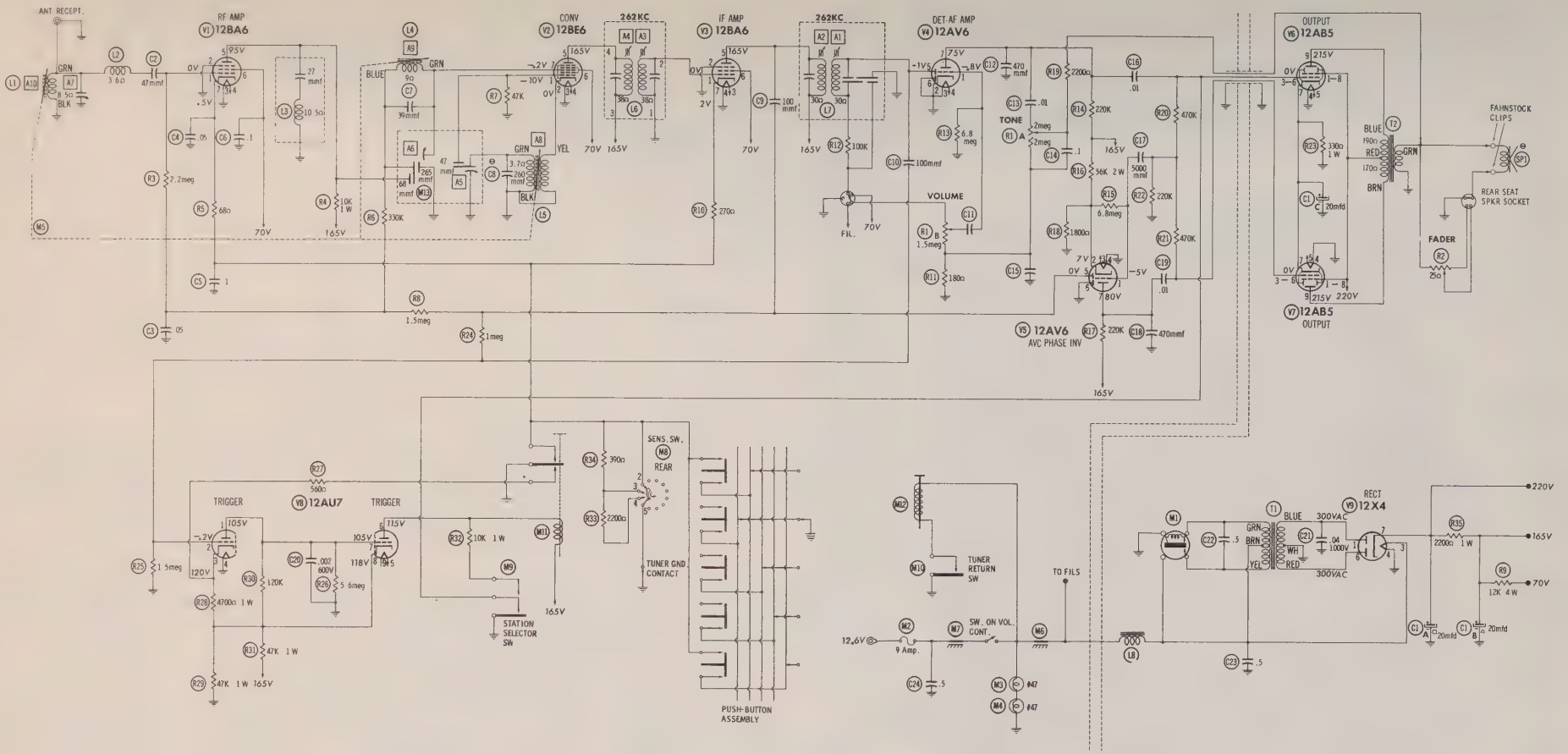


FIG. 2



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on components values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BA6	6.2Meg	0Ω	0Ω	1.6Ω	↑12K	↑14K	68Ω		
V2	12BE6	47K	.9Ω	0Ω	1.6Ω	↑2200Ω	↑14K	4.3Meg		
V3	12BA6	38Ω	0Ω	1.6Ω	0Ω	↑2200Ω	↑14K	270Ω		
V4	12AV6	6.8Meg	0Ω	0Ω	1.6Ω	1.6Meg	0Ω	↑222K		
V5	12AV6	6.8Meg	1800Ω	1.6Ω	0Ω	2.5Meg	0Ω	↑222K		
V6	12AB5	↑0Ω	NC	690K	0Ω	1.6Ω	690K	330Ω	↑0Ω	↑190Ω
V7	12AB5	↑0Ω	NC	690K	0Ω	1.6Ω	690K	330Ω	↑0Ω	↑170Ω
V8	12AU7	↑170K	1.5Meg	35K	0Ω	1.6Ω	↑2200Ω	↑170K	30K	NC
V9	12X4	225Ω	NC	1.6Ω	0Ω	NC	280Ω	40K		

↑ MEASURED FROM PIN 7 OF V9.
NC NO CONNECTION.

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PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

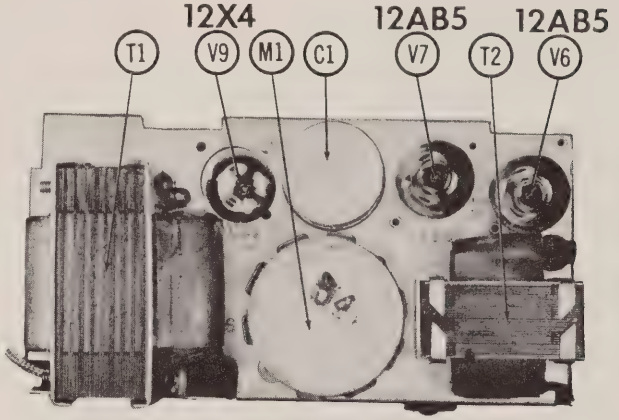
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	9A	65R16248	9K535719 *	307009. (SFE 9A)	155009.	SFE 9	HRH

* Part #9K535739 used in Model 911.

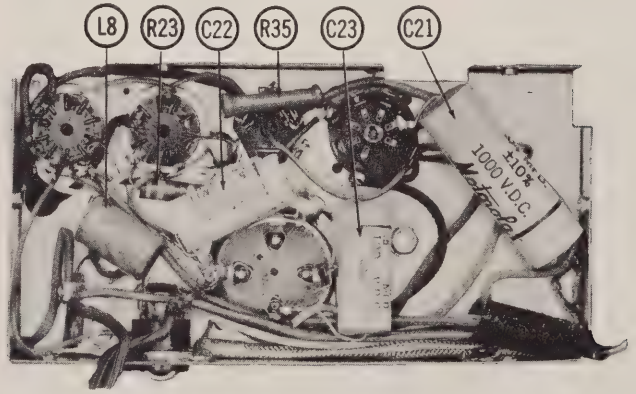
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Dial Light	65X11854	#47
M4	Dial Light	65X11854	#47
M5	Tuner	77D536085	Search (Permeability, complete)Tuner ST165. Used in Models 910HR and 910. Includes L1, L4, L5
	Tuner		Search (Permeability, complete) Tuner ST164. Used in Model 911. Includes L1, L4, L5
M6	Spark Plate	64K530177	12.6V Power Input Lead
M7	Spark Plate	64K530177	Filament
M8	Switch	40K533634	Search Sensitivity (SP-3 position, rotary, wafer type) Used in Models 910HR and 910
	Switch	40B532862	Search Sensitivity (SP-3 position , rotary, wafer type) Used in Model 911
M9	Switch	40K533884	Station Selector
M10	Switch	40K533883	Tuner return
M11	Relay	80K533881	
M12	Solenoid	80K535849	Includes plunger
M13	Trimmer Cap.	20K533072	Dual: Osc. (A5), 40MMF nominal & RF (A6), 165MMF nominal. Unit also consists of 68MMF, 265MMF and 47MMF fixed capacities.
A7	Trimmer Cap.	20B532899	Ant. (20-150MMF)
	Knob	36B532949	Tone & speaker, Models 910HR, 910
	Knob	36B535692	Tone & speaker, Model 911
	Knob	1V533109	On-off-volume & tuning, Models 910HR, 910
	Knob	1V532877	On-off-volume & tuning, Model 911
	Pushbutton & Slide Assy.	1K533898	Used with tuner Model ST-164 (Model 911)
	Pushbutton & Slide Assy.	1K533905	Used with tuner Model ST-165 (Models 910HR, 910)
	Board	84K533867	Tab Rail
	Contact	39K533868	Pushbutton Slide
	Contact	39K533869	Selector Tab (Set of 5)
	Tab	72K533889	Indicator (Set of 5)
	Dial Scale	34K535141	Model 911
	Dial Scale	34K535145	Models 910HR, 910
	Dial Crystal	61K533909	Models 910HR, 910
	Dial Pointer Assy.	52K535850	Model 911
	Dial Pointer Assy.	52K533906	Models 910HR, 910

POWER SUPPLY – TOP VIEW



POWER SUPPLY – BOTTOM VIEW



PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

PHILCO MODELS E2002C, E2004F, G, SP, UE2002C, UE2004F, G, SP (Ch. 7E10, 7E10-U, 7E11, 7E11-U)

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PHILCO MODEL E2002C (Ch. 7E10)

TRADE NAME	Philco	MODELS	CHASSIS
		E2002C	7E10
		UE2002C	7E10-U
		E2004F, E2004G, E2004SP	7E11
		UE2004F, UE2004G, UE2004SP	7E11-U
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.		
TYPE SET	Television Receiver		
TUBES	Fifteen		
POWER SUPPLY	105-125 Volts AC - 60 Cycles	RATING: 115 Watts (1.07 Amp. @ 117Volts AC)	
TUNING RANGE	Channels 2 thru 13VHF, 14 thru 83UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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PHILCO MODELS E2002C, E2004F, G, SP, UE2002C, UE2004F, G, SP (Ch. 7E10, 7E10-U, 7E11, 7E11-U)

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DATE 2-57 SET 348 FOLDER 10

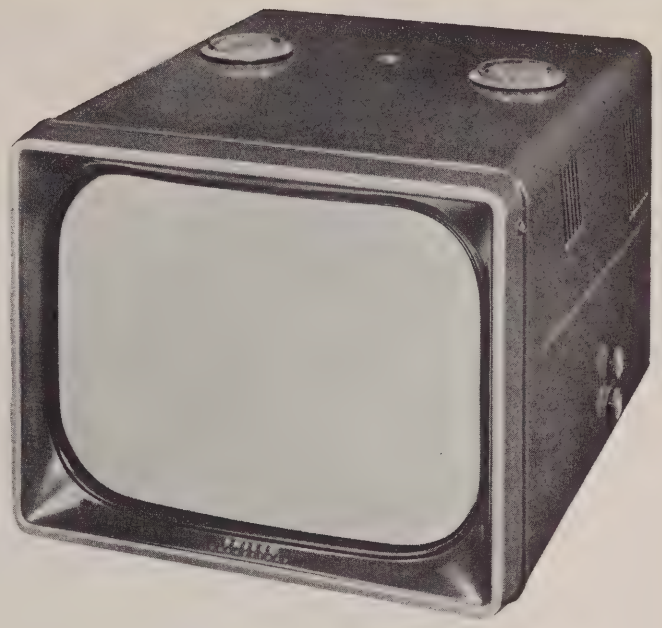
PHOTOFACT* Folder
*TRADE MARK

PHILCO MODELS E2002C, E2004F, G, SP, UE2002C, UE2004F, G, SP (Ch. 7E10, 7E10-U, 7E11, 7E11-U)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type control knobs.
2. Remove 6 metal screws, remove rear cover.
3. Remove 2 screws, remove antenna terminals.
4. Remove speaker leads.
5. Remove 4 metal screws, remove front.
6. Remove 2 chassis bolts from bottom.
7. Remove 1 metal screw from top.
8. Remove 4 metal screws holding picture tube strap.
9. Remove chassis from front.
10. Remove 2 speaker nuts, remove speaker.



MODEL	CHASSIS
E2002C	7E10

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 metal screws holding cabinet front. Using extreme caution, remove front and safety glass.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

SPECIAL ADJUSTMENT

Focus

Variable by means of position of strap or picture tube base, pins 6 and 10 or 6 and 2. Readjust ion trap for best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal oscillator coil is used as the horizontal hold control and is located on the rear of the set. Adjust the horizontal hold until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A9) located on top of the chassis for MINIMUM buzz.

FUSES

A 4.7Ω fusible resistor (R67) is used for LV circuit protection.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic-rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

PHILCO MODELS E2002C, E2004F, G, SP, UE2002C, UE2004F, G, SP (Ch. 7E10, 7E10-U, 7E11, 7E11-U)

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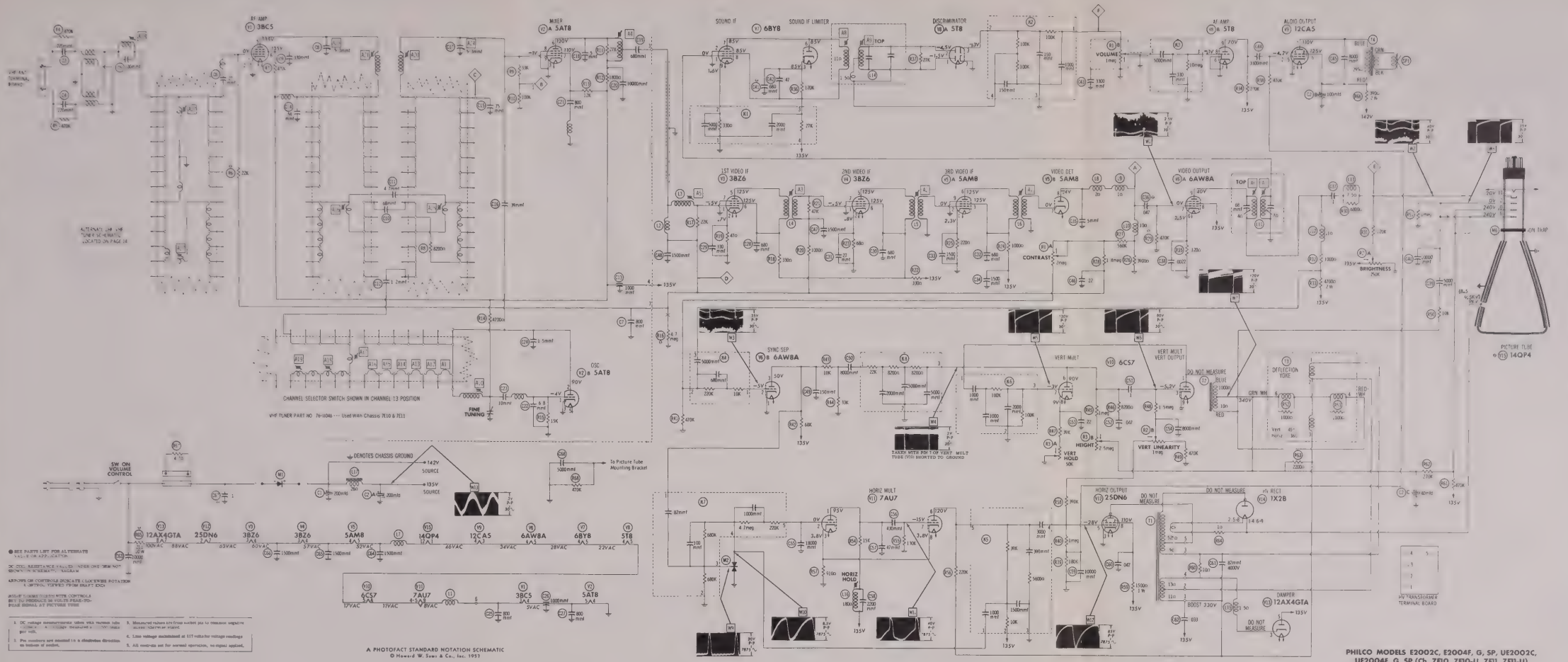

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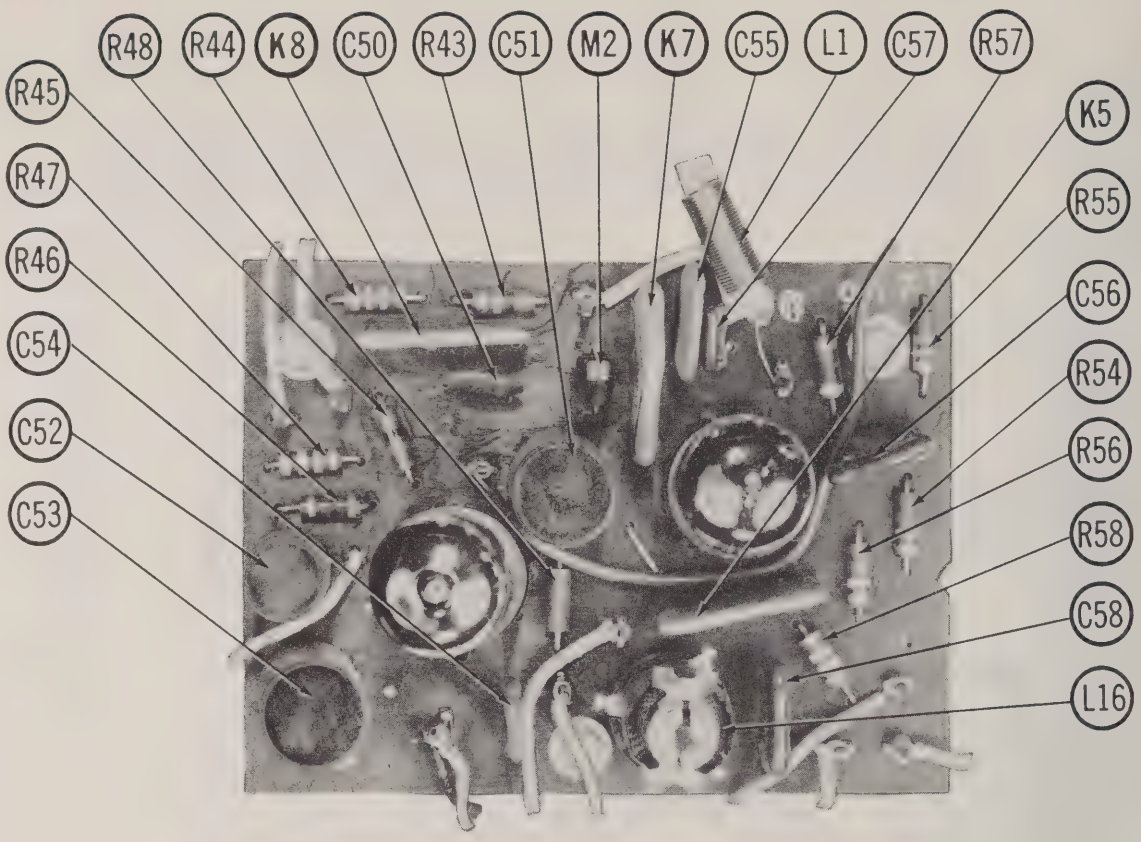
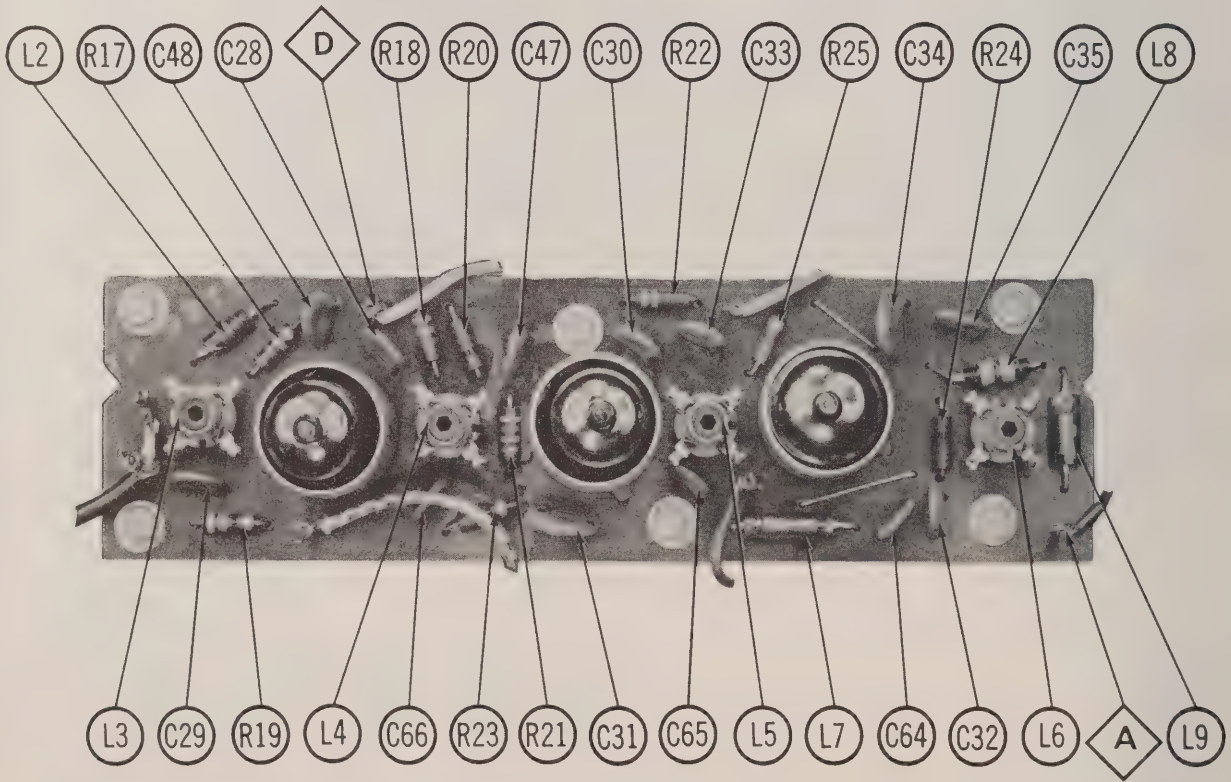
PHILCO MODELS E2002C, E2004F, G, SP, UE2002C, UE2004F, G, SP (Ch. 7E10, 7E10-U, 7E11, 7E11-U)

CHASSIS-BOTTOM VIEW

PHILCO MODELS E2002C, E2004F, G, SP, UE2002C, UE2004F, G, SP (Ch. 7E10, 7E10-U, 7E11, 7E11-U)

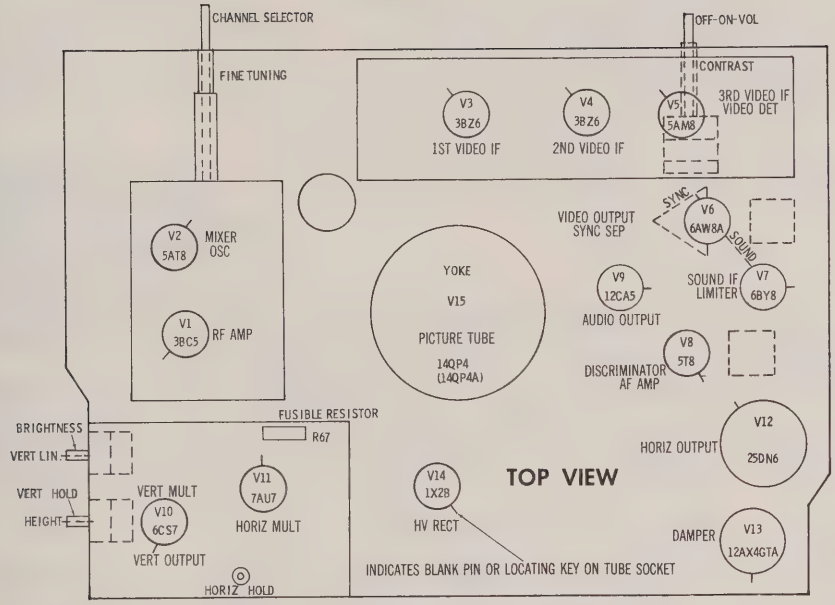


DEFLECTION CIRCUIT PRINTED BOARD



VIDEO IF PRINTED BOARD

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

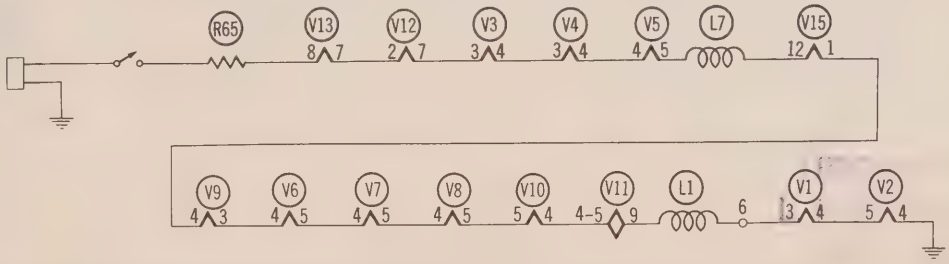
POWER SUPPLY FAILURE
No raster, no sound - Fusible Resistor (R67), Rectifier (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V15
Has pic, no sound - V7, V8, V9

SYNC FAILURE
No vert. sync - V6, V10
No horiz. sync - V6, Diode M2, V11
No vert. or horiz. sync - V6

SWEEP FAILURE
No raster, has sound - V11, V12, V13, V14, V15
No vertical deflection - V10
Poor vert. linearity or foldover - V10
Poor horiz. linearity or foldover - V11, V12, V13
Narrow picture - V11, V12, V13, M1
Vert. off freq. - V6, V10
Horiz. off freq. - M2, V11

Since this receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below.)



SET 348 FOLDER 10

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓓ. Positive to chassis. Set the contrast control fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to point Ⓑ. Low side to chassis.	Not Used	44.4MC (400∿ 30% AM Mod.)	4	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A1	Adjust for maximum indication on scope. Vary generator output to maintain 2 volts peak to peak on scope.
2.	"	"	"	43.5MC	"	"	A2	"
3.	"	"	"	45.75MC	"	"	A3	"
4.	"	"	"	45.0MC	"	"	A4	"
5.	"	"	"	42.0MC	"	"	A5	"
6.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	69MC (10MC Swp)	67.25MC 70.0MC	"	"		Connect a second marker generator to point Ⓒ and set it to 45.75MC Adjust fine tuning until two markers coincide. Leave the fine tuning in this position. Remove the separate marker from point Ⓒ. Adjust A4 to place 67.25MC marker at 50% on the response curve as in Fig. 1. Adjust A1 to level curve if it is tilted. Adjust A2 to place 70MC marker at 50% on curve as in Fig. 1.

4.5MC TRAP ALIGNMENT

Pre-tune 4.5MC probe (Fig. 2) by connecting the input to an accurate source of 4.5MC. Connect the output to a VTVM. Tune the detector probe slug for maximum reading on the VTVM.
Connect the input of the detector probe to point Ⓔ and chassis. Connect the output of the detector probe to the VTVM.
Tune in a TV station and turn the fine tuning SLIGHTLY in a clockwise direction from the point of best picture and adjust A6 for MINIMUM reading on the VTVM.

SOUND IF ALIGNMENT

Connect the DC probe of a VTVM to point Ⓕ. Common to chassis. Detune A9 to give a positive peak voltage. Turn the fine tuning SLIGHTLY counter clockwise or attenuate the signal input to the receiver so that the reading on the VTVM does not exceed .75 volts during alignment to insure non-limiting action. If the signal is too strong to attenuate sufficiently, it may be necessary to apply a bias to point Ⓓ.
Adjust A7 and A8 for maximum deflection. Adjust the fine tuning for best picture and remove the bias if any was used. Adjust A9 for zero voltage.

VHF OSCILLATOR ALIGNMENT

Set the fine tuning to the center of its rotation.
Tune in the highest high band (7-13) channel operating in the vicinity and adjust A10 for best picture and sound. Where an optimum setting of A10 cannot be made to bring all the high band channels within the range of the fine tuning, it will be necessary to adjust the appropriate coil for that channel in a descending order. All is for Channel 12, A12 is for Channel 10, etc. thru A16 which is for channel 7. All thru A16 should not be adjusted unless absoluately necessary since these are factory adjustments and are pre-set at the factory.
Turn the channel selector to the highest low band channel (2 thru 6) operating in the vicinity and with the fine tuning in its mid-range position, adjust the appropriate slug (A17 for channel 6 and 5, A18 for channel 4 and 3 and A19 for channel 2) for best picture and sound. Adjust the rest of the channel adjustments in descending order. In UHF models the oscillator adjustments are reached thru holes provided in the UHF tuner.

VHF RF AND MIXER ALIGNMENT

Disconnect AGC lead from terminal #7 on the tuner and connect the negative lead of a 2.5 volt bias to terminal #7. Connect the positive lead to chassis.
Set the fine tuning to the center of rotation.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point Ⓑ. Low side to chassis.	A20, A21, C14	Adjust A20 and A21 for maximum response with markers as indicated in Fig. 3. Adjust C14 for proper bandwidth if necessary, by moving ground lead closer to or further away from ground lug. Moving toward lug widens bandwidth.
8.	"	"	"	"	"	"	A22	Adjust for maximum amplitude.
9.	"	"	177MC (10MC Swp)	175.25MC 179.75MC	7	"	A23, A24	Adjust for maximum response similar to Fig. 3. Repeat steps 7, 8 and 9 for optimum response on all high band channels.
10.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A25, A26, A27	Adjust for maximum response similar to Fig. 3. The bandwidth may be varied by altering the spacing between A25 and A26.
11.	"	"	44MC (10MC Swp)	44.0MC	"	"	A28	Adjust for MINIMUM response.

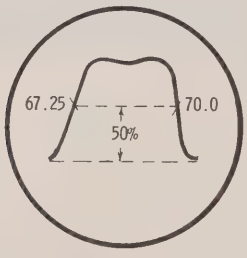


FIG. 1

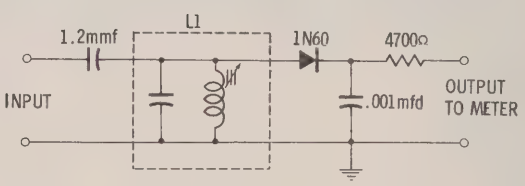


FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

UHF ALIGNMENT

Set channel selector to UHF.
Connect a 50 to 100MMF capacitor from pin 6 (plate) of the mixer-osc. to chassis. This will detune A4 to eliminate any interference with the response curve.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	680Ω carbon resistor	High side to point Ⓖ. Low side to chassis.	44MC (10MC Swp)	44.0MC	Any non-interfering channel.	Vert. amp. to point Ⓑ. Low side to chassis.	A29, A30	Adjust for maximum response with MINIMUM tilt. It may be necessary to adjust spacing between A29 and A30 for proper bandwidth. (See Fig. 4)
13.	Two 120Ω carbon resistors	Across UHF antenna terminals with 120Ω in each lead.	680MC (10MC Swp)	680MC	Between 48 and 49	"	A31, A32	Adjust for proper response. This response must be a compromise for the entire UHF tuning range similar to Fig. 4. Remove the capacitor placed on pin 6 of mixer-oscillator.

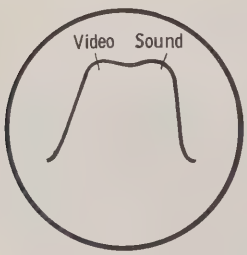


FIG. 3

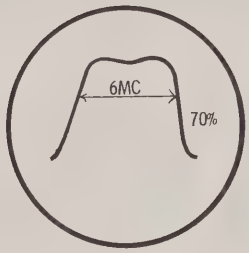
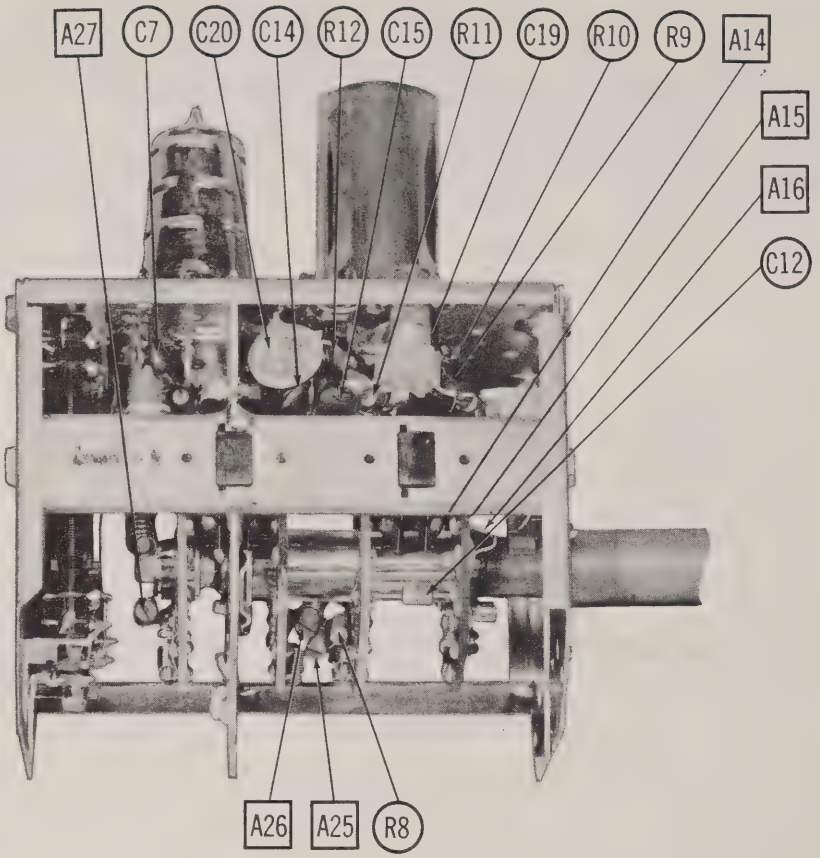


FIG. 4

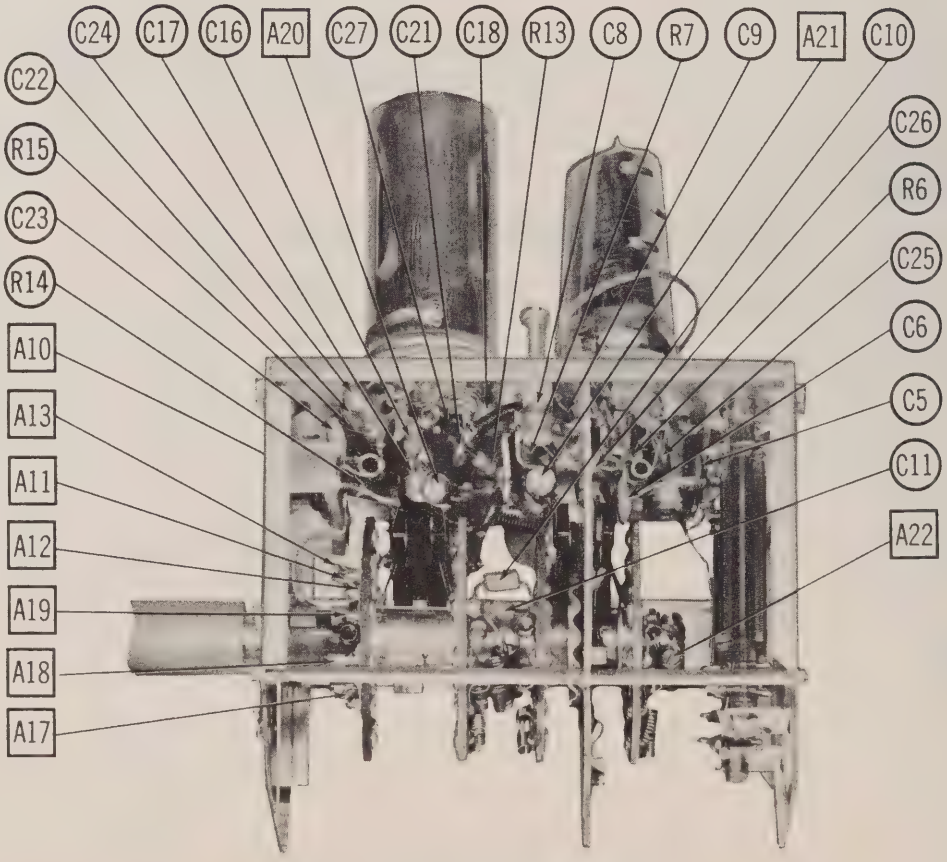
CRITICAL LEAD DRESS

If the volume control cable, connecting the arm of the control (R1B) to the control grid (pin 8) of the audio amplifier tube (V8B), is not properly dressed, a feedback squeal of objectionable volume may be heard.

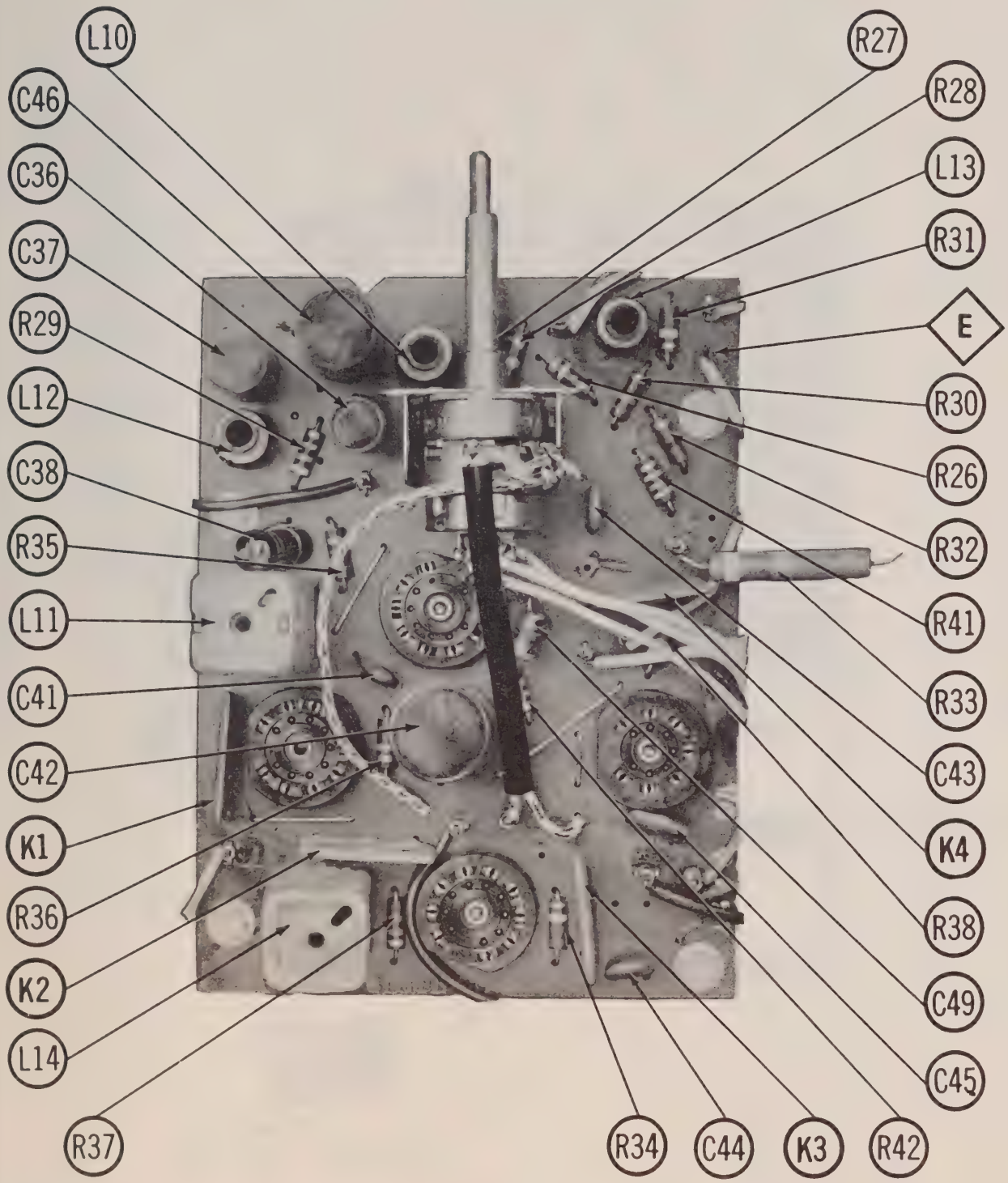
Dress the inner conductor of the cable (black and white trace) as close to the surface of the panel as possible. In addition to this, tilt the audio coupling component combination (K3) toward the tube socket of V8 as far as practicable.



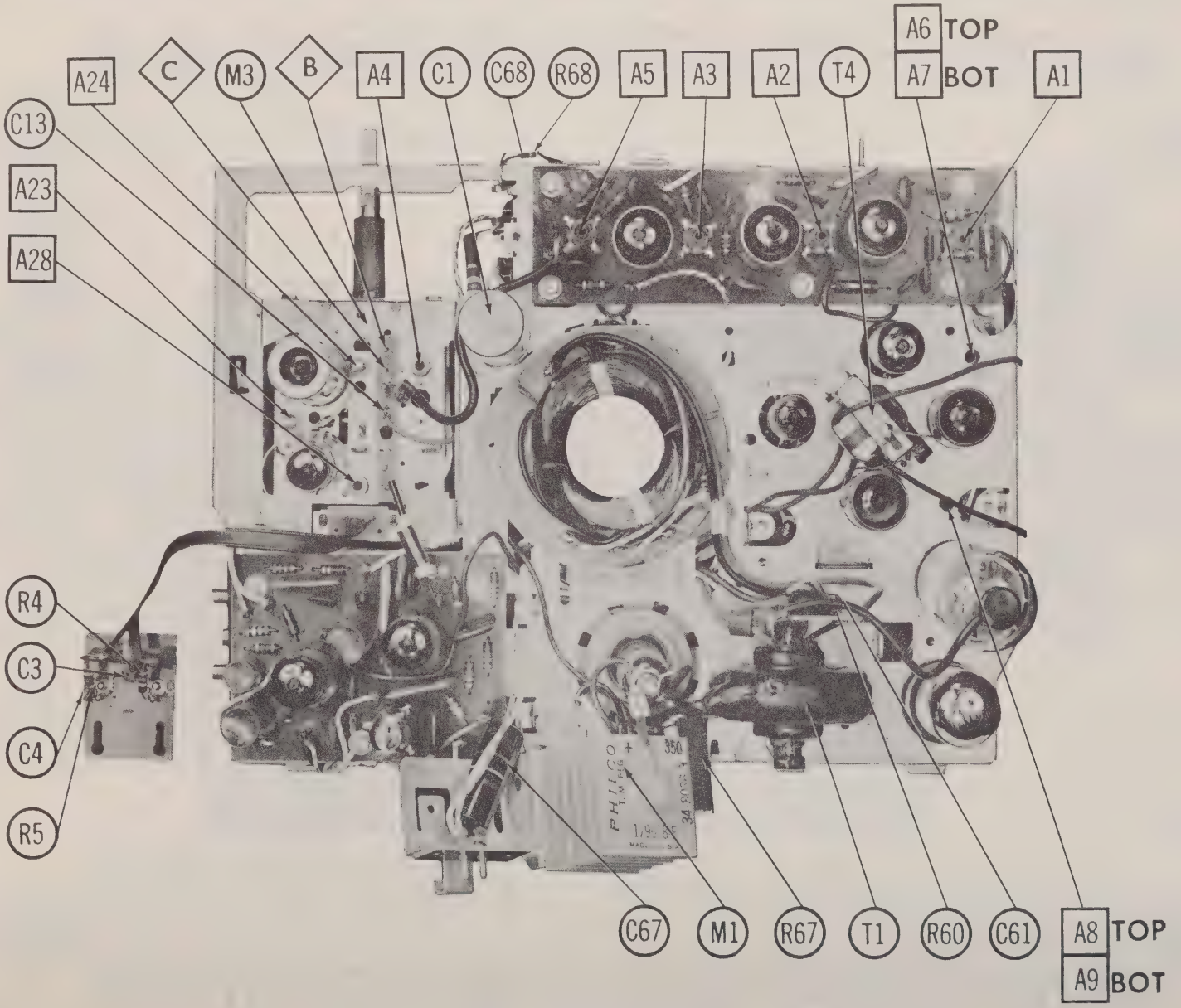
RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE



VIDEO & SOUND PRINTED BOARD

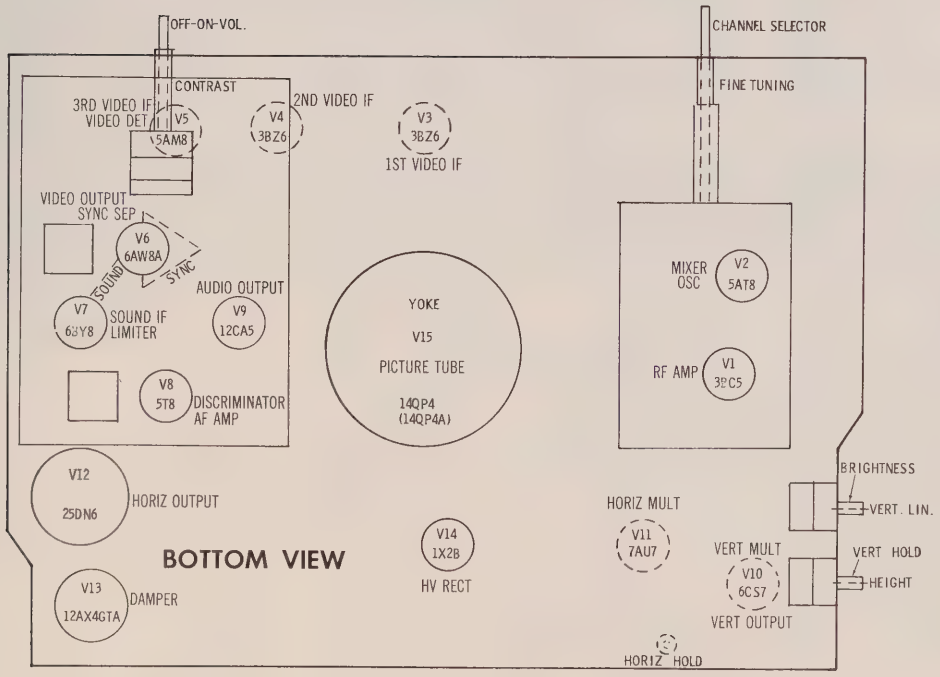


CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BC5	1.4Meg	0Ω	2Ω	1.1Ω	†26Ω	†500Ω	0Ω		
V2	5AT8	15K	†4700Ω	0Ω	0Ω	1.1Ω	†1800Ω	†12K	0Ω	130K
V3	3BZ6	1.4Meg	47Ω	10.5Ω	10Ω	†690Ω	†690Ω	0Ω		
V4	3BZ6	1.4Meg	68Ω	10Ω	9.5Ω	†350Ω	†350Ω	0Ω		
V5	5AM8	220Ω	.2Ω	†1000Ω	9.5Ω	9Ω	†1000Ω	.2Ω	3900Ω	0Ω
V6	6AW8A	0Ω	600K	†30K	7Ω	6Ω	120Ω	470K	†26Ω	†5700Ω
V7	6BY8	7.5Ω	0Ω	†150K	6Ω	5Ω	†27K	†27K	†27K	330Ω
V8	5T8	100K	100K	200K	5Ω	4Ω	0Ω	0Ω	10Meg	†220K
V9	12CA5	0Ω	650K	7Ω	8.5Ω	650K	†390Ω	†700Ω		
V10	6CS7	‡2200Ω	NC	• 2.2Meg	3Ω	4Ω	‡1.5Meg	100K	• 55K	0Ω
V11	7AU7	†15K	5Meg	910Ω	3Ω	3Ω	†49K	130K	910Ω	2Ω
V12	25DN6	NC	22Ω	0Ω	TP	750K	TP	16Ω	†1500Ω	TOP CAP ‡20Ω
V13	12AX4GTA	NC	NC	180K	NC	†26Ω	TP	22Ω	25Ω	
V14	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡545Ω
V15	14QP4	11Ω	1Meg	Pin 6 ‡180K	Pin 10 ‡180K	Pin 11 • †140K	Pin 12 13Ω			

† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V13.
NC NO CONNECTION
TP TIE POINT
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.



TUBE PLACEMENT CHART

SET 348 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amp.	3DK 5	
V2	Mixer/Osc.	5AT8	
V3	1st Video IF Amp.	3BJ6	
V4	2nd Video IF Amp.	3BZ6	
V5	3rd Video IF Amp. Video Det.	3AM9	
V8	Video Output Sync Sep.	6AW8A	
V7	Sound IF Amp. Limiter	6BY6	

ITEM No	USE	TYPE	NOTES
V8	Discriminator-AF Amp.	5T8	
V9	Audio Output	12CA5	
V10	Vert. Multi.- Vert. Output	6CS7	
V11	Horiz. Multi.	7AU7	
V12	Horiz. Output	25DN8	
V13	Damper	12AX4GTA	
V14	HV Rectifier	1X2B	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	PHILCO PART No.	B.T. PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V15	14QP4 ① 14QP4A ②	14QP4	14QP4 14QP4A ②	14QP4 14QP4A ②	① Used in chassis TE10 & TE10-U. ② Used in chassis TE11 & TE11-U. ③ Aluminized. ④ Silver screen #5

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	NOTES
C1	300	150	30-2590-4	AFS31-24-24		FP51-7 UU-48	TM8-25 TD-50-150	T-055 TMT-1550	TVA-1200	R2349*
C2A B C	.200 ●100 .40	150 150 350	30-2590-5	AFM3-4-55	RDH188 RDH4035	FP229 ③ TC483	2 MD-20 TD-40-350	T-575 MT-45150		R2350*

* Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART. No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	220			BPD-00022	DD-221	L10T22	ED-220	UC-5223	5GA-T22	
C4	220			BPD-00022	DD-221	L10T22	ED-220	UC-5223	5GA-T22	
C5	.002			BPD-0001	DD-201	L07T1	ED-500	UC-531	5GA-T1	
C6	27			BPD-000027	DD-270	L10Q27	ED-27	UC-5427	5GA-Q27	
C7	1800			BPD-0008	DD-801	BYA10T8	ED-800	UC-538	5GA-T8	
C8	5-3				339-3		315-D		CT-565A	
C9	330			BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C10	68									
C11	4.7			MP0-814.7	TCE-4.7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	
C12	1.2									
C13	1000			RY-001	MPT-1000				50RC-D1	
C14	150			MT50-0150	TCH-150	C10Q59U	TCT-59			
C15	T8			NT50-8T8	TCH-T8	C10Q75U	TCT-75	MT-5475	5TCU-Q75	
C16	.39									
C17	5-3				339-3		315-D		CT-565A	
C18	5			MP0-815	TCE-5	C10V5C	TCO-5			
C19	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C20	10000			BPD-01	DD-103	BYA501	GP-10000	DC511	5HK-B1	
C21	800			BPD-0008	DD-801	BYA10T8	ED-800	UC-538	5GA-T8	
C22	8.5			MP0-816.5	TCE-8.5	C10V68C	TCC-8.5	ZT-5568	5TCCB-V68	
C23	10			MP0-810	TCE-10	C10Q1C	ED-10	ZT-541	5TCCB-Q1	
C24	1.5									
C25	800			BPD-0008	DD-801	BYA10T8	ED-800	UC-538	5GA-T8	
C26	1000			EP-001	MPT-1000				50RC-D1	
C27	800			BPD-0008	DD-801	BYA10T8	ED-800	UC-538	5GA-T8	
C28	680		30-1362-15	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C29	330		30-1362-21	BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C30	680		30-1362-15	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C31	680		30-1362-6	BPD-000027	DD-270	L10Q27	ED-27			
C32	680		30-1362-15	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C33	1500		30-1362-8	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C34	1800		30-1362-9	BPD-0015	DD-152	BYA10D15	GP-1500	DC5215	5HK-D15	
C35	5		30-2303	MP0-815	TCE-5	C10V5C	TCO-5	ZT-565	5TCCB-V47	
C36	.047	200		BPD-05	DF-503	CUB2S47		GEM-3147	2TM-S47	Note 1
C37	.1	200	30-4684-30	P288M-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C38	.0022	400	30-4687-3	BPD-0022	DD-223	CUB4D22		GEM-4223	4TM-D22	
C39	5000		30-1238-16	BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	
C40	10000		30-1238-6	BPD-01	DD-103	BYA501	GP-10000	DC511	5HK-B1	
C41	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	Note 2
C42	47	500	30-4685-34	P288M-47		CUB1P47		GEM-1047	1TM-P47	
C43	3300		30-1262-25	BPD-0033	DF-333	BYA10D33	GP-3300	UC-5233	5GA-D33	
C44	3300		30-1262-25	BPD-0033	DS-333	BYA10D33	GP-3300	UC-5233	5GA-D33	
C45	6800		30-1262-11	BPD-008	DS-803	BYA10D8	GP-8000	UC-528	5GA-D8	
C46	22	200	30-4684-32	P288M-22		CUB2P22		GEM-3022	2TM-P22	
C47	1500		30-1262-9	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C48	1500		30-1262-9	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C49	150		30-1263-32	BPD-00015	DD-151	L10T15	ED-150	UC-5315	5HK-T15	
C50	8000		30-1262-11	BPD-008	DS-803	BYA10D8	GP-8000	UC-528	5GA-D8	
C51	.1	400	30-4684-47	P498N-1		DF-104		GEM-401	4TM-P1	
C52	.047	400	30-4684-45	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C53	22	200	30-4684-32	P288M-23		CUB2P22		GEM-3022	2TM-P22	
C54	6000		30-1262-11	BPD-008	D4-802	BYA10D8	GP-8000	UC-528	5GA-D8	
C55	18000		30-1262-26	BPD-018	D4-183	BYA10S18			5HK-S18	
C56	430		30-1264-6	BPD-00043	DD-431	L10T43	ED-430	UC-5343	5GA-T43	
C57	47		30-1264-3	BPD-000047	DD-470	L10Q47	ED-47	UC-5447	5GA-Q47	
C58	2200		30-1264-2	BPD-0022	D4-222	BYA10D22	GP-2200	UC-5322	5GA-D22	
C59	10000		30-1238-6	BPD-01	DD-103	BYA501	GP-10000	DC511	5HK-B1	
C60	.047	200	30-4650-45	BPD-05	DF-503	CUB2S47		GEM-3147	2TM-S47	
C61	82	4000	30-1245-4							
C62	.033	400	30-4650-44	BPD-03	DF-303	CUB4S33		GEM-4133	4TM-S33	
C63	10000		30-1238-6	BPD-01	DD-103	BYA501	GP-10000	DC511	5HK-B1	
C64	1500		30-1262-9	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C65	1500		30-1262-8	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C66	1500		30-1262-8	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C67	.1	600		P488N-1		DF-104	CUB6P1	GEM-601	6TM-P1	Note 3
C68	5000		30-1238-1	BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	

Note 1: Some versions use .033mfd in this application.
Note 2: Some versions use 470mmf in this application.
Note 3: Some versions use .047mfd in this application.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A B C	2Meg 1Meg Switch		33-5584-1					Contrast Volume
R2A B	250K 1Meg		33-5573-20	F1-34 R2-51		UX-1378 Not Req.		Brightness Vert. Lin.
R3A B	50K 2.5Meg		33-5573-21	F1-29 R2-76		UX-1893 Not Req.		Vert. Hold Height

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING OHMS	RATING WATT	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	NOTES
R4	470K			BTS-470K	
R5	470K			BTS-470K	
R6	22K			BTS-22K	Note 1
R7	470Ω			BTS 470	
R8	8200Ω			BTS-8200	
R9	33K			BTS-33K	
R10	100K			BTS-100K	
R11	27K			BTS-27K	
R12	1800Ω			BTS-1800	
R13	15K			BTS-12K	
R14	4700Ω			BTS-4700	
R15	15K			BTS-15K	
R16	4.7Meg		66-5478240	BTS-4.7Meg	Note 4
R17	22K		66-3228240		
R18	330Ω		66-1538240	BTS-330	
R19	47Ω		66-0478240	BTS-47	
R20	1000Ω		66-1038240		
R21	47K		66-3478240		
R22	330Ω		66-1538240	BTS-330	
R23	68Ω		66-0688240	BTS-68	
R24	1000Ω		66-1038240	BTS-1000	
R25	330Ω		66-1538240	BTS-330	
R26	3300Ω		66-2338240	BTS-3300	
R27	560K		66-4568240		
R28	1.5Meg		66-5158240		
R29	470K		66-4478240	BTS-470K	Note 3
R30	6800Ω		66-2688240		
R31	120K		66-4128240	BTS-120K	
R32	1000Ω		66-2108240	BTS-1000	
R33	4700Ω	2	66-2478240	BTS-4700	
R34	220K		66-4228240	BTS-220K	
R35	130Ω		66-1318240	BTS-130	
R36	130K		66-4138240	BTS-130K	

ITEM No	RATING OHMS	RATING WATT	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	NOTES
R37	27K		66-3278240	BTS-27K	
R38	470K		66-4478240	BTS-470K	
R39	180K		66-4188240	BTS-180K	
R40	1Meg		66-5108240	BTS-1Meg	
R41	470K		66-4478240	BTS-470K	
R42	68K		66-3688240	BTS-68K	
R43	10K		66-3108240	BTS-10K	
R44	33K		66-3338240	BTS-33K	
R45	1Meg		66-5108240	BTS-1Meg	
R46	9200Ω		66-2928240	BTS-9200	
R47	39K		66-3398240	BTS-39K	
R48	1.5Meg		66-5158240	BTS-1.5Meg	
R49	470K		66-4478240	BTS-470K	
R50	10K		66-3108240	BTS-10K	
R51	1Meg		66-5108240	BTS-1Meg	
R52	10000Ω		66-2108240		
R53	1000Ω		66-2108240		
R54	1Ω		66-3538240		
R55	150K 5%		66-4158240		
R56	220K		66-4228240		
R57	90Ω 5%		66-1908240		
R58	390K		66-4398240		
R59	1500Ω	1	66-2158240	BTS-1500	
R60	10Ω		66-0108240	BTS-10	
R61	470K		66-4478240	BTS-470K	
R62	270K		66-4278240	BTS-270K	
R63	22000		66-2228240	BTS-2200	
R64	1Ω		66-0038240	UW1-1	
R65	2Ω	10	33-1363-4		Note 3
R66	3900	2	66-3398240	BTS-390	
R67	4.7Ω		33-1368	FRS. 8	
R68	470K		66-4478240	BTS-470K	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA PHILCO PART No.	Halldorson PART No	Merit PART No	RCA TYPE No.	Ram PART No	Stancor PART No	Thordarson PART No.	Triad PART No.
T1	Horiz. Output Trans.	33-8746-1	Z1804	A-5037	122T1	V31A	A-8123	26852	A-103X
T2	Vert. Output Trans.	33-8581-1							
T3A	Yoke(70°)Horiz(31MH) Vert(13MH)	76-10701	DF604 D B	DMDF-702 J		Y70F30 J	DY-124D Y-8123	Y-8123	Y-24
B			J	J		J	J		

① Remove capacitor across horiz. yoke terms #3 and #7.
② Use original yoke clamping device and centering device.
③ Connect horiz. yoke term #3 to horiz. output trans. term #3; horiz. yoke terms #2 and #7 to horiz. output trans. term #2; horiz. yoke term #1 to horiz. output trans. term #1.
④ Use original yoke clamping device and centering device.
⑤ Remove capacitor across yoke terms #1 and #2.
⑥ Requires new yoke clamping device and centering device.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA PHILCO PART No.	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No.	NOTES
T4	5000Ω	3-4Ω	32-9747	Z1000 ①	A-3026	A-3877 ①	24S01 ①	S-6X	

① Drill one new mounting hole.

SPEAKER

ITEM No	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP	REPLACEMENT DATA PHILCO PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	36-1698-1	4A07	

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA PHILCO PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	NOTES
L1	Fil. Choke	32-4112-58	19-1003		4606	2.5 Microhenries
L2	RF Choke	32-4645-5				.23 Microhenry
L3	1st Video IF	32-4656				
L4	2nd Video IF	32-4656-1				
L5	3rd Video IF	32-4656-2				
L6	4th Video IF	32-4656-3				
L7	Fil. Choke	32-4645-6	19-1003		4606	2.5 Microhenries
L8	RF Choke	32-4674-1	19-8033		6163	Channel 6 Beal, 22 Microhenries
L9	RF Choke	32-4645-7				Channel 8 Beal, 3 Microhenries
L10	Shunt Peaking Coil	32-4680-11	19-4400	TV-180	6154	190 Microhenries
L11A	4.5MC Trap	33-4686				
B	1st Sound IF	33-4686				
L12	Shunt Peaking Coil	32-4690-13			6188	470 Microhenries
L13	Series Peaking Coil	32-4680-7	19-3350	TV-185	6164	330 Microhenries
L14	Discriminator	32-4689				Tertiary winding = L 5Ω
L15	RF Choke	32-4112-50	19-1005		4623	11 Microhenries

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No	MEISSNER PART No	MERIT PART No	MILLER PART No.	RCA TYPE No.	Ram PART No	Thordarson PART No.	NOTES
L16	180Ω		32-4672-3							35-70 Millihenries

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS INDUCTANCE @ CURRENT 1000 ~(.)	REPLACEMENT DATA PHILCO PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No.
L17	.240A	20H	32-9745	C5041 ①	C-3998 ①	C-3238 ①	28C44	C-21X

① Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA
K1	Sound IF	5000MMF, 3000MMF, 350Ω, 27K	30-8030	Aerovox PA-485-2
K2	Discriminator	1000MMF, 150MMF, 150MMF, 100K, 100K, 100K	30-8031	Aerovox PA-456-2
K3	Audio Coupling	5000MMF, 330MMF, 10Meg	30-8033	Aerovox PA-489
K4	Sync-Sep. Grid	5000MMF, 680MMF, 220K, 10K	30-8019-1	Aerovox PA-454-3
K5	Horiz. Osc. -Phase	1000MMF, 1000MMF, 390MMF, 3000MMF, 10K, 39K, 5800Ω	30-8015	Aerovox PA-456-3
K6	Vert. Osc. Grid	3000MMF, 1000MMF, 1000MMF, 100K, 100K	30-8015	Aerovox PA-456-3
K7	Horiz. -Phase Comp.	82MMF, 1000MMF, 100MMF, 680K, 680K, 4.7Meg, 330K	30-8016	Aerovox PA-481-4
K8	Vertical Intergrator	2000MMF, 5000MMF, 5000MMF, 22K, 82000, 8200Ω	30-8018	Aerovox PA-483-2 Centralab PC-109 Cornell-Dubilier 187M1 Erie 1405-01 Sprague T-1

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA PHILCO PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.
M1	.240A	54-8036-3 ①	1033A ①	1N1007 ③	RS350SIL ①	RS350 ①	6G84 ①	350A ①
M2		54-8037-3 ②			1T1 ②			

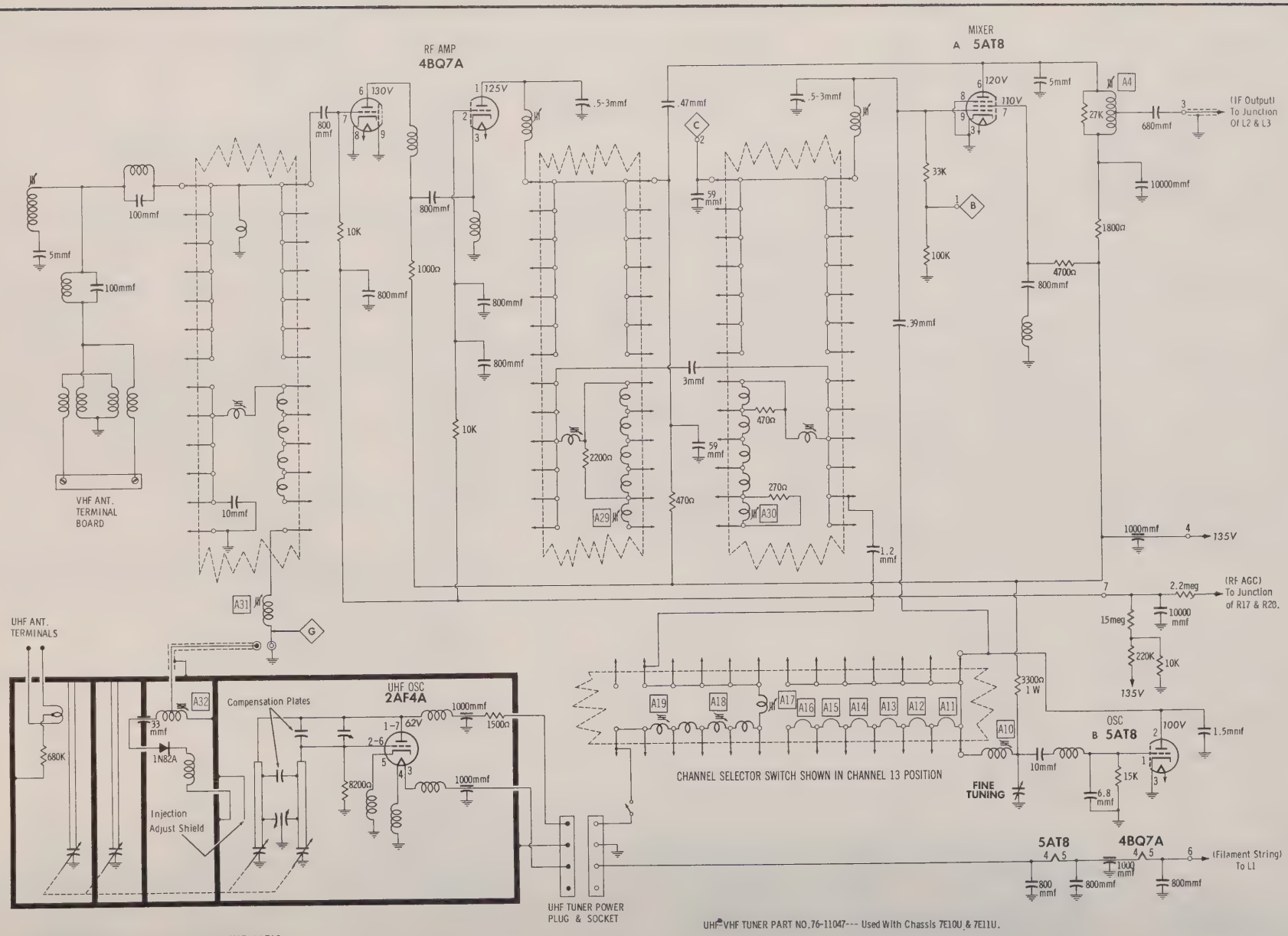
① Selenium type.
② Germanium type.
③ 2 required.

MISCELLANEOUS

ITEM No	PART NAME	PHILCO PART No.	NOTES
M3	Tuner	76-1054S	VHF (T-70) Used with chassis TE10 & TE11.
	Tuner	76-1054P*	VHF (T-80) Used with chassis TE10U & TE11U.
M4	Tuner	76-1030*	UHF (T-80) Used with chassis TE10U & TE11U.
M5	Centering Device	76-1069	
M6	Ion Trap	76-8077-3	
	Ion Trap	76-8077-7	Alternate Philco Part Number
	Printed Board	54-9792	Video IF
	Printed Board	54-9791	Video Output & Sound
	Printed Board	54-8790-1	Deflection Osc.
	Cabinet	1183-1	Models E3002C, U3002C.
	Cabinet	1183-7	Models E3004G, U3004G.
	Cabinet	1183-11	Models E3004SP, U3004SP.
	Cabinet	1183-13	Models E3004Y, U3004Y.
	Easelie	54-1289	All Models Except E3002C & U3002C.
	Safety Glass	54-9788-3	All models except E3002C & U3002C.
	Safety Glass	54-9788	Models E3002C, U3002C.
	Knob	54-8585	Brightness, Models E3002C, U3002C.
	Knob	54-8585-3	Brightness, All models except E3002C & U3002C.
	Knob	54-8261	Channel Selector - Model E3002C.
	Knob	54-8261-1	Channel Selector - Models E3004G, SP, Y.
	Knob	54-8261-3	Channel Selector - Model U3002C.
	Knob	54-8261-5	Channel Selector - Models U3004G, SP, Y.
	Knob	54-8262	Fine Tuning, Models E3002C, U3002C.
	Knob	54-8262-1	Fine Tuning, All models except E3002C, U3002C.
	Knob	54-8265-1	Vert. Hold - Models E3002C, U3002C.
	Knob	54-8265-3	Vert. Hold - All models except E3002C, U3002C.
	Knob	54-8263	Vol.-Off-On - Models E3002C, U3002C.
	Knob	54-8263-1	Vol.-Off-On - All models except E3002C, U3002C.

* UHF-VHF combination tuner (T-80) part #76-1054T.

PHILCO MODELS E2002C, E2004F, G, SP, UE2002C, UE2004F, G, SP (CH. 7E10, 7E10-U, 7E11, 7E11-U)



UHF-VHF TUNER PART NO. 76-11047--- Used With Chassis 7E10U & 7E11U.

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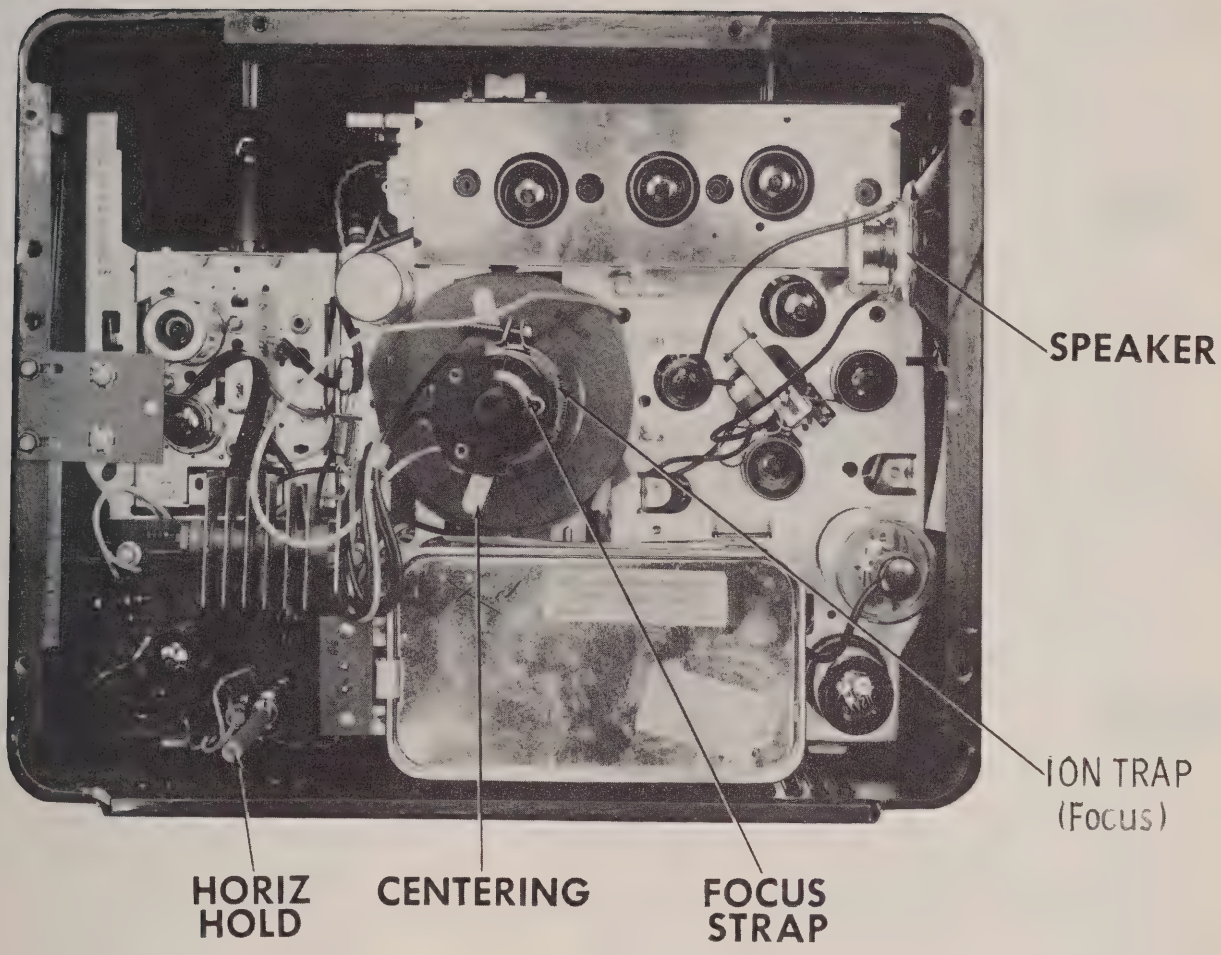
ALTERNATE UHF-VHF TUNER SCHEMATIC



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Adjust the horizontal hold until the picture synchronizes horizontally.

Switch channel selector off channel and back again. Retouch the horizontal hold to again sync the picture horizontally. Repeat until the picture remains in sync when the channel selector is switched off channel and back.

If the picture cannot be synchronized with the horizontal hold or if the adjustment drifts, replace the horizontal oscillator tube V11.

ROLAND
MODELS 5PL, 5P5-1, 5P5U-1

ROLAND
MODELS 5PL, 5P5-1, 5P5U-1

ROLAND
MODELS 5PL, 5P5-1, 5P5U-1

TRADE NAME	Roland Models 5PL, 5P5-1, 5P5U-1
MANUFACTURER	Roland Radio Corp., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det-AVC-AF Amp., 3V4 Output
POWER SUPPLY	105-125 Volts AC-DC (or) 7.5 Volts "A" Supply & 67.5 Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC (or) 65MA @ 7.5 Volts DC & 6.5MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	535KC - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

ROLAND
MODEL 5PL

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det-AVC-AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ROLAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150		PRS150/25V	BBRT84215	WT240		D-080	TVL-3431. 4
B	60	150		4040/100	BRH251			MT-02100	
C	100	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ROLAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	. 05	200		BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C3	1. 5			NP0-SIL 5	TCZ-1R5	TZ04	TCO-1. 5	ZT-5515	5TCCB-V15	
C4	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C5	2. 7									
C6	220			DI-00022	DD-221	G051	ED-220	UC-5322	5GA-T22	
C7	2000			BPD-002	DD-202	K072	ED-002	DC522	5HK-D2	
C8	10000			BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C9	. 1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C10	. 047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ROLAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1Meg	1/2	VC-82					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

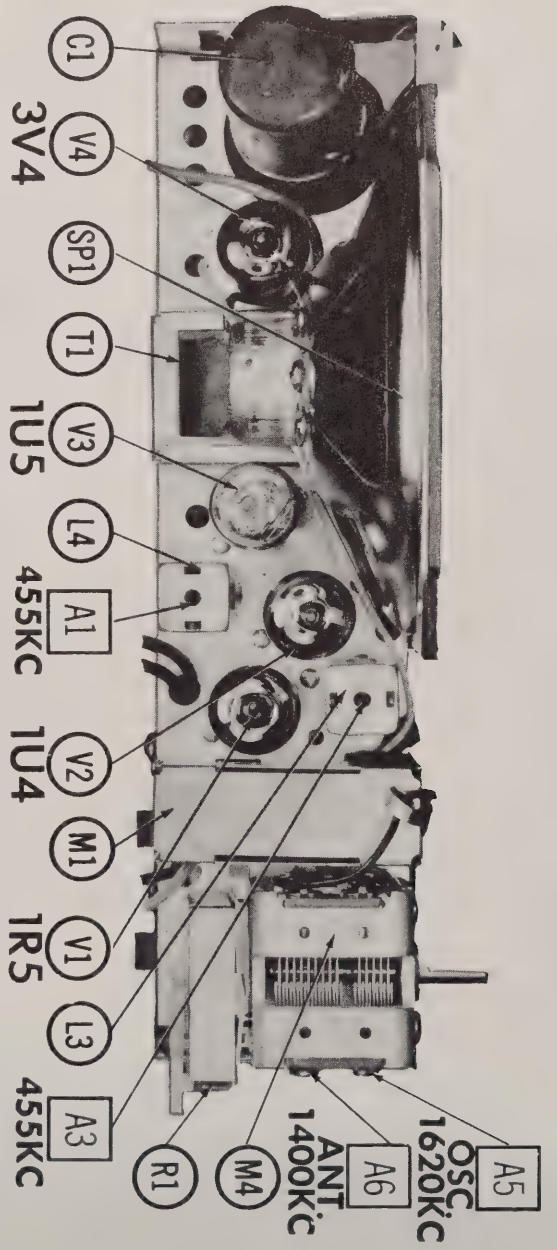
ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ROLAND PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	100K			BTS-100K	
R3	15K			BTS-15K	
R4	680Ω			BTS-680	
R5	3. 3Meg	5%		BTS-3. 3Meg 5%	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ROLAND PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R6	47K			BTS-47K	
R7	150Ω			BTS-150	
R8A	750Ω	5			
B	1500Ω	5			
R9	37Ω	2			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ROLAND PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	8900Ω	3-4Ω	TR-108		A-2927 ①				① Bend ears under.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ROLAND PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	LPFE21-1				
L2	Osc. Coil		14-1073			
L3	Input IF	LF-62	16-6800	BC-358	10-C1	
L4	Ouput IF	LF-62	16-6801	BC-359	10-C2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ROLAND PART No.	REPLACEMENT DATA	
K1 K2	IF Grid Filter Detector-Audio Net.	10Meg, 1000MMF 4. 7Meg, 1Meg, 3. 3Meg, 10Meg, 2000MMF, 10000MMF, 150MMF, 150MMF, 5000MMF		Aerovox Aerovox Centralab Sprague	PA647 PA521 PC-165 DP-1

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	ROLAND PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.060A		1386	RS065Q	6S65	8J1	65	

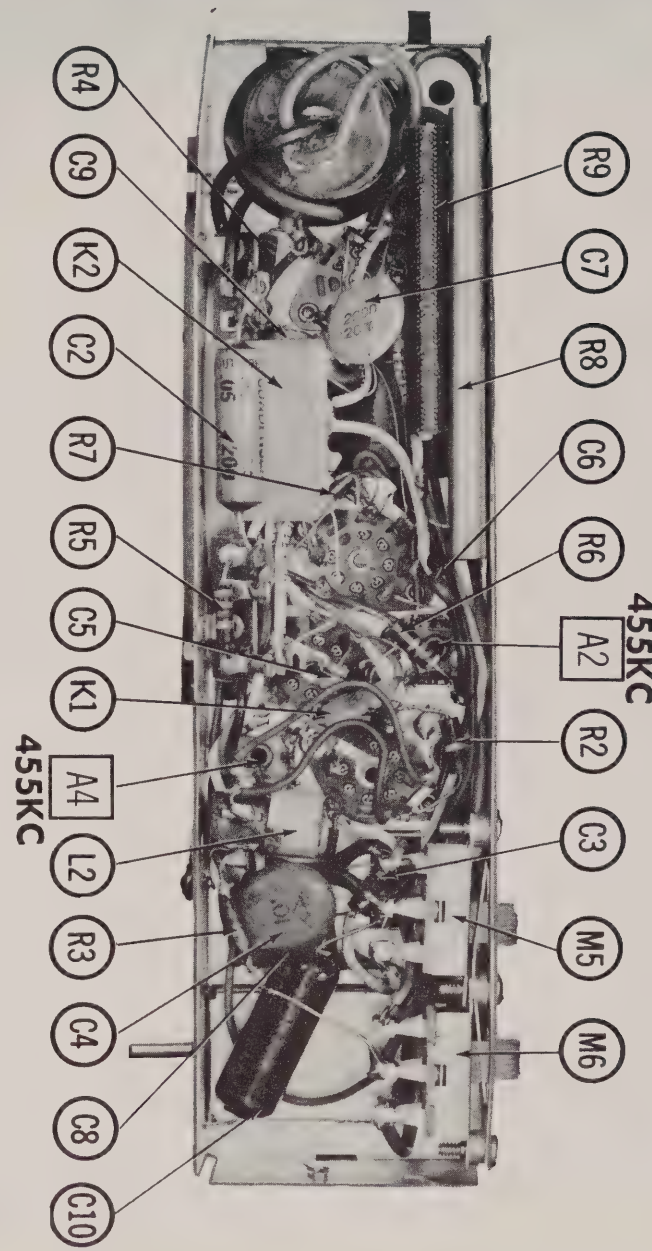
BATTERIES

ITEM No.	VOLTAGE	ROLAND PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	7 1/2V "A"		717			C5			
M3	67 1/2V "B"			477			P45		

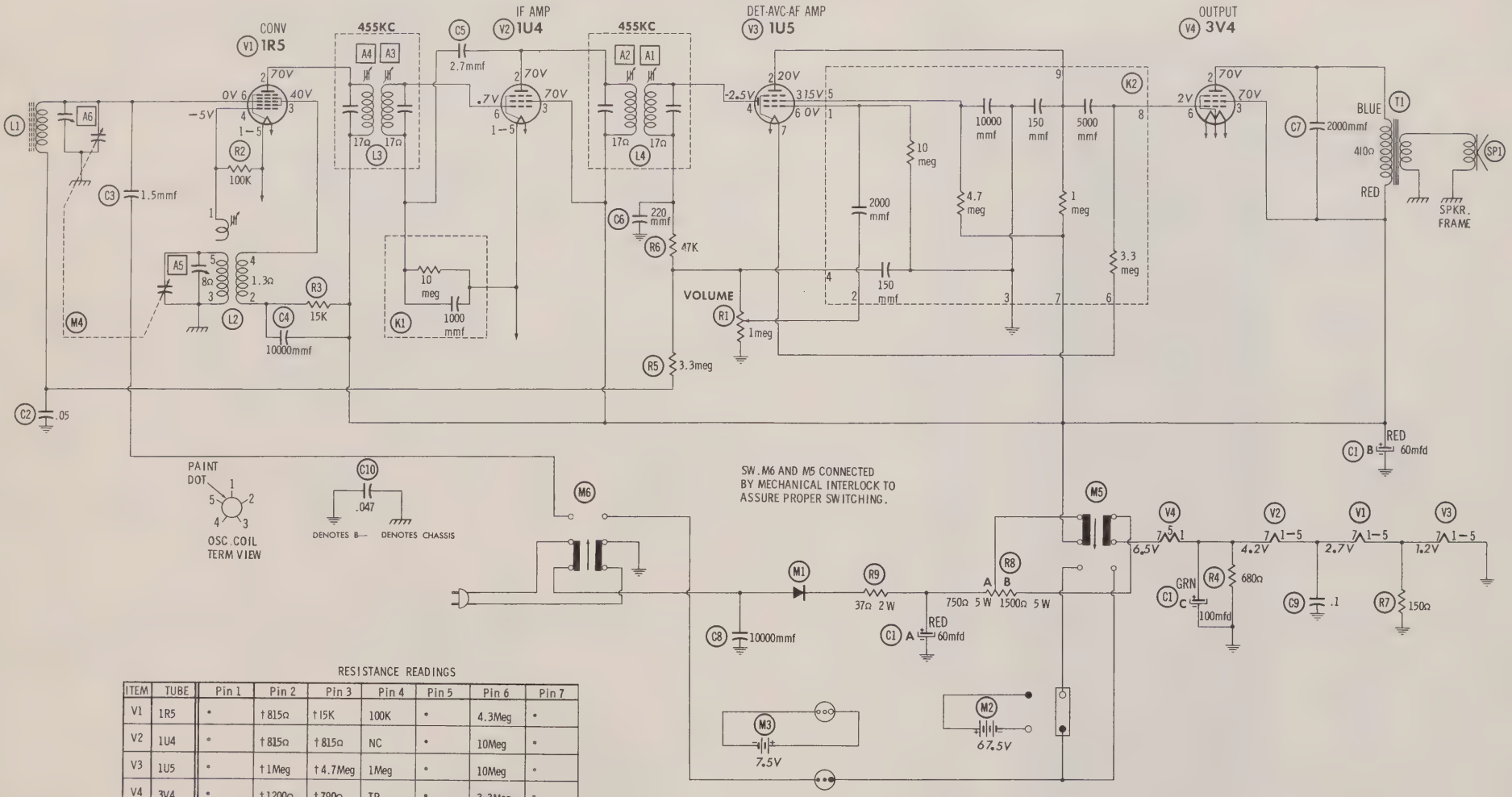
MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M4	Tuning Cap.	CV-74	2 Gang (10-235MMF, 15-115MMF)
M5	Switch		Power Selector (DPDT, Slide Type)
M6	Switch		Power Selector (DPDT, Slide Type)

CHASSIS—BOTTOM VIEW



ROLAND MODEL 5PL



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	*	†815Ω	†15K	100K	*	4.3Meg	*
V2	1U4	*	†815Ω	†815Ω	NC	*	10Meg	*
V3	1U5	*	†1Meg	†4.7Meg	1Meg	*	10Meg	*
V4	3V4	*	†1200Ω	†790Ω	TP	*	3.3Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION.
TP TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

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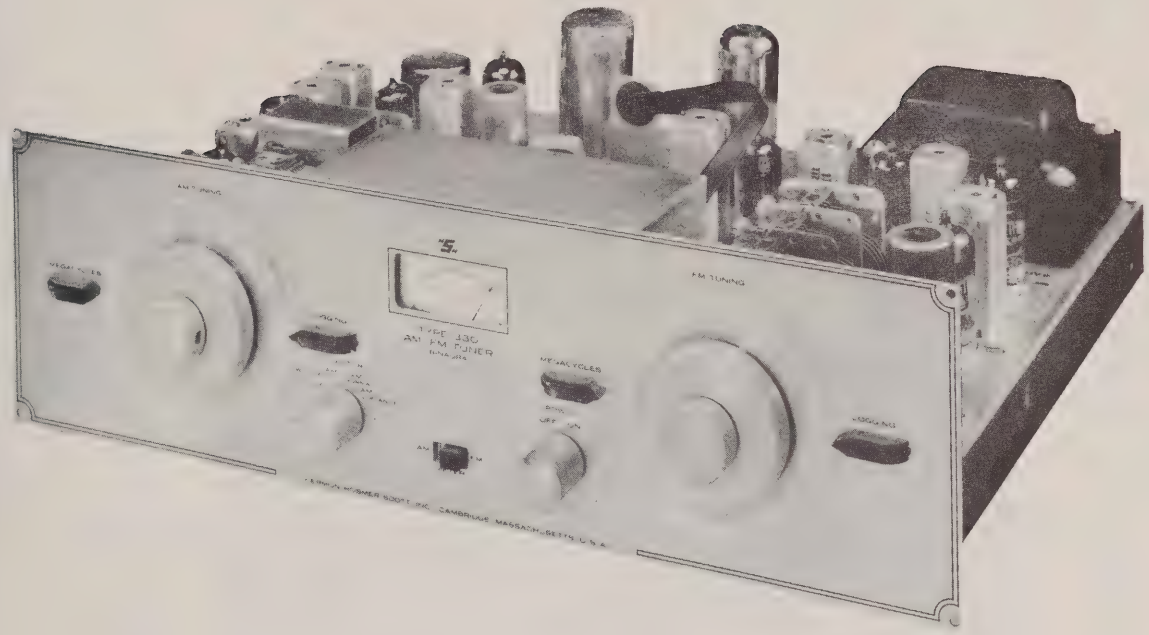
H. H. SCOTT
MODEL 330

H. H. SCOTT
MODEL 330



H. H. SCOTT
MODEL 330

TRADE NAME	H. H. Scott Model 330		
MANUFACTURER	Hermon Hosmer Scott, Inc., 385 Putnam Ave., Cambridge 39, Mass.		
TYPE SET	AC Operated FM-AM Tuner		
TUBES	Twelve		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	.52 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540KC-1620KC	FREQ. MOD.	88MC-108MC

DENVER, COLORADO

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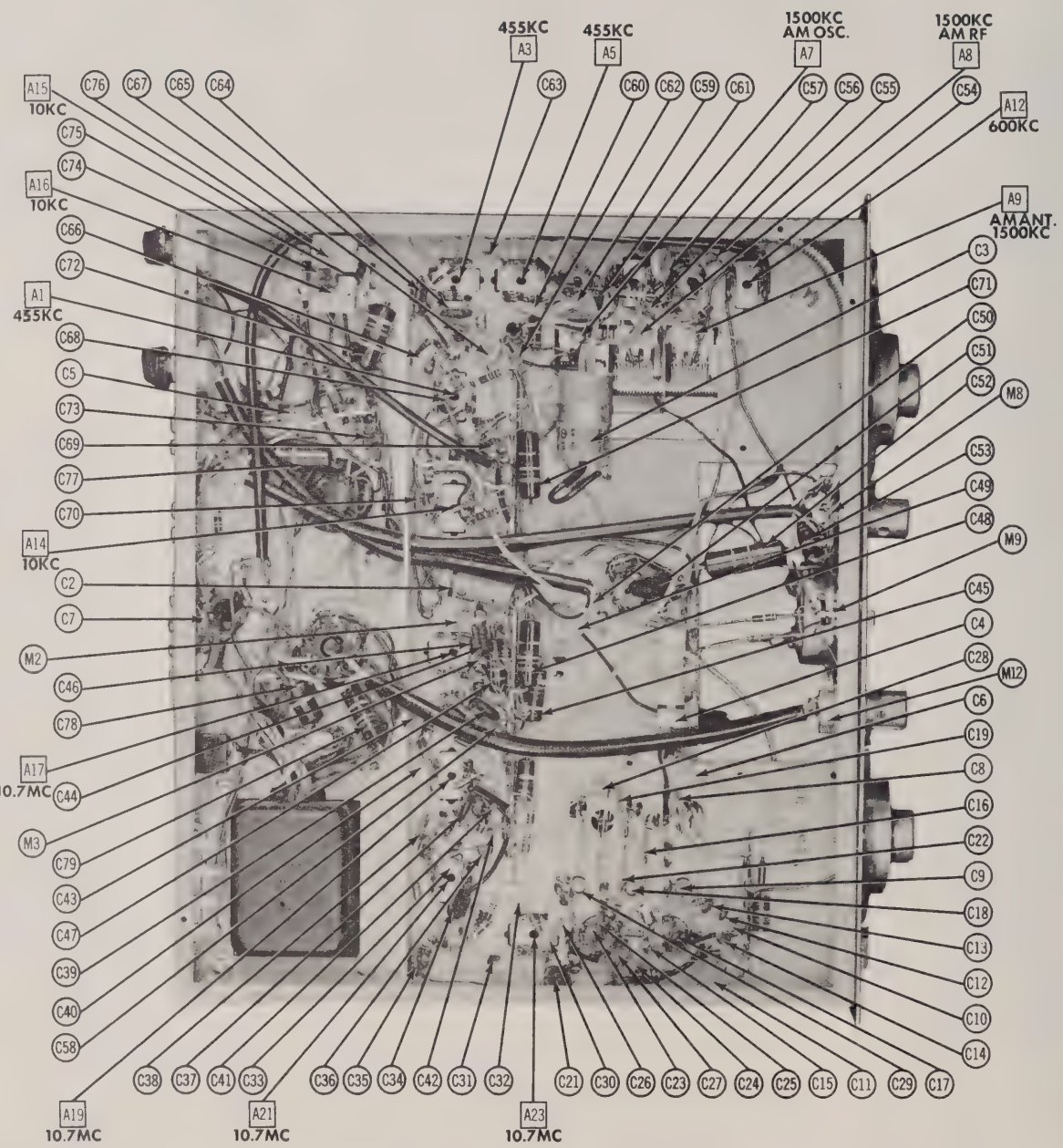
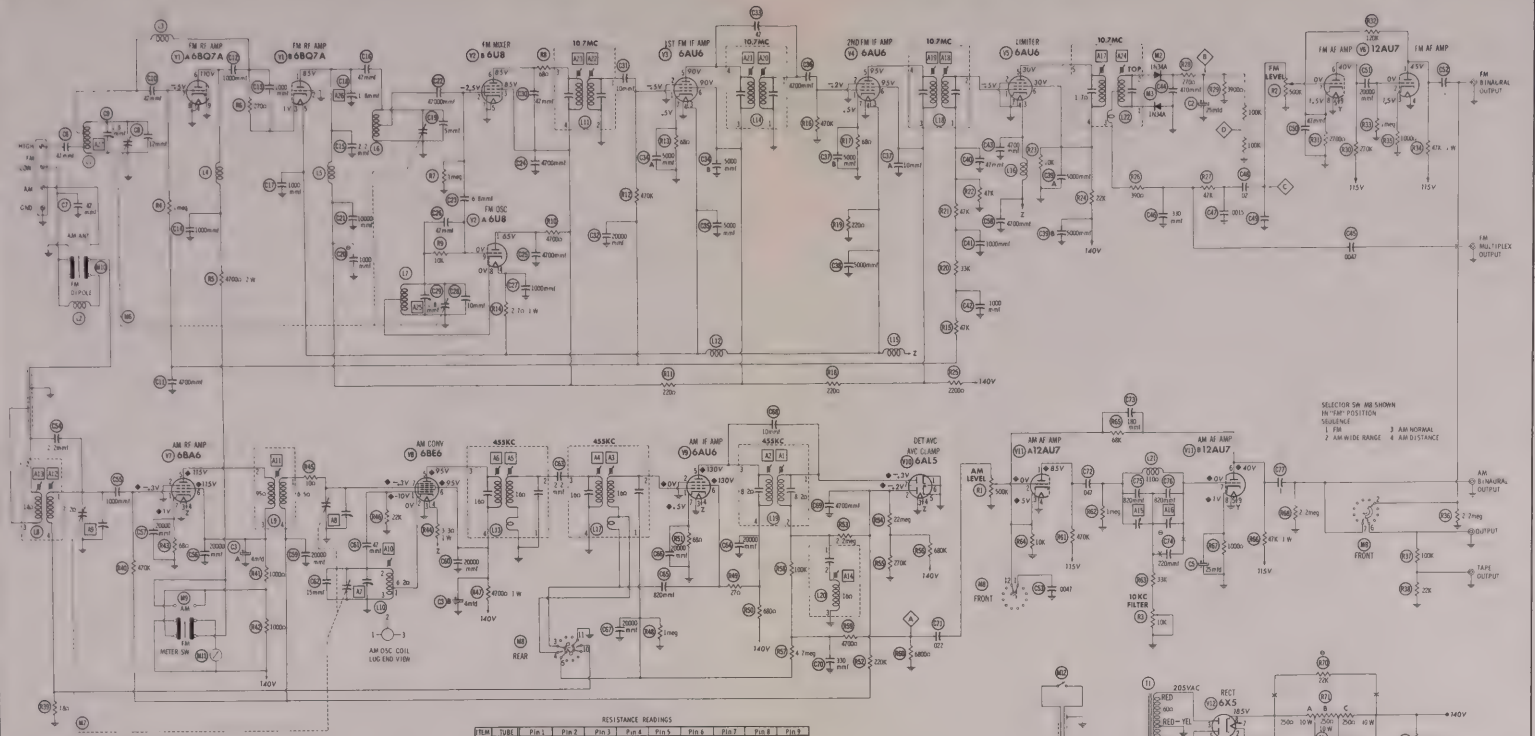


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

H.H. SCOTT
MODEL 330



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7A	† 3400Ω	0Ω	270Ω	0Ω	0Ω	† 6600Ω	1.1MEG	0Ω	0Ω
V2	6U8	† 8000Ω	1MEG	† 3400Ω	1 Ω	0Ω	† 3500Ω	0Ω	0Ω	10K
V3	6AU6	620K	0Ω	8Ω	0Ω	† 3200Ω	† 3200Ω	68Ω		
V4	6AU6	470K	0Ω	8Ω	0Ω	† 3000Ω	† 3000Ω	68Ω		
V5	6AU6	47K	0Ω	8Ω	0Ω	† 23K	† 23K	0Ω		
V6	12AU7	† 50K	1MEG	1000Ω	0Ω	0Ω	† 275K	0Ω	2700Ω	7Ω
V7	6BA6	3MEG	0Ω	0Ω	7Ω	∗ † 2400Ω	∗ † 2400Ω	68Ω		
V8	6BE6	22K	7Ω	0Ω	2.2Ω	† 5400Ω	† 5400Ω	2.5MEG		
V9	6AU6	850K	0Ω	0Ω	8Ω	† 1400Ω	† 1400Ω	68Ω		
V10	6AL5	0Ω	2.2MEG	0Ω	8Ω	0Ω	0Ω	110K		
V11	12AU7	† 480K	0Ω	∗ 10K	0Ω	0Ω	† 35K	1MEG	1000Ω	7Ω
V12	6X5	NC	0Ω	68Ω	TP	0Ω	TP	.8Ω	30K	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 8 OF V12.
∗ MEASURED IN "AM" POSITION
NC NO CONNECTION.
TP TYE POINT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Tube complement for conditions of voltage readings
5. Manufacturer's tolerance on component values makes possible a variation of +-15% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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348-12

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
Short pin 9 of 6U8 (V2) to chassis during FM IF Alignment.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to AM antenna stator lug on AM tuning gang (front section). Low side to chassis.	455KC (400∿Mod)	AM	1600KC	DC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	Direct	"	1500KC	"	1500KC	"	A7, A8, A9	"
3.		Loop	600KC	"	600KC	"	A10, A11, A12, A13	"
4.		"	1400KC (10KC Mod)	"	1400KC	"	A14	With A15 and A16 shorted adjust A14 for MINIMUM deflection.
5.		"	"	"	"	"	A15, A16	With A14 shorted, adjust A15, A16 and R4 for MINIMUM deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point (B). Common to chassis.	A17, A18, A19, A20, A21, A22, A23	Adjust for maximum deflection.
7.	"	"	"	"	"	DC probe to point (C) Common to point (D)	A24	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (B). Low side to chassis.	A17, A18, A19, A20, A21, A22, A23	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
7.	"	"	"	"	"	Vert. Amp. to point (C). Low side to point (D).	A24	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2 SLIGHTLY retouch A23 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC (Unmod)	FM	108MC	DC probe to point (B). Common to chassis.	A25	Adjust for maximum deflection.
9.	"	"	92MC	"	92MC	"	L6	Adjust for maximum deflection by expanding or compressing coil turns.
10.	"	"	98MC	"	98MC	"	A26, A27	Adjust for maximum deflection.

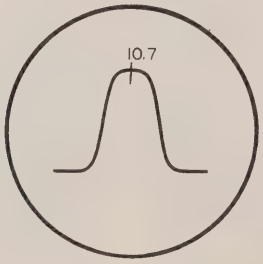


FIG. 1

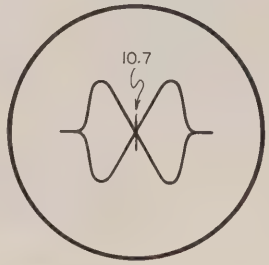


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6BQ7A	
V2	FM Mixer-Oscillator	6U8	
V3	1st. FM IF Amplifier	6AU6	
V4	2nd. FM IF Amplifier	6AU6	
V5	FM Limiter	6AU6	
V6	FM AF Amplifier	12AU7	

ITEM No.	USE	TYPE	NOTES
V7	AM RF Amplifier	6BA6	
V8	AM Converter	6BE6	
V9	AM IF Amplifier	6AU6	
V10	AM Det.-AVC-AVC Clamper	6AL5	
V11	AM AF Amplifier	12AU7	
V12	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA H.H. Scott PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬40	200		AFH4-01-60	DO020	FP423	TMQ-116	D-130	R2342 *
B	■40	200			BR4025	TC58		MTD-4540	
C	▲40	200							
D	40	200							
C2	25	25		PRS25V25	BBR25-25	TC26	TD-25-25	FM-0225	TVA-1205
C3A	4	250			BBR4-250	TC50X	TD-4-250	MT-2504	TVA-1501
B	4	250			BBR4-250	TC50X	TD-4-250	MT-2504	TVA-1501
C4	4	250		PRS250V4	BBR4-250	TC50X	TD-4-250	MT-2504	TVA-1501
C5	25	25		PRS25V25	BBR25-25	TC26	TD-25-25	FM-0225	TVA-1205

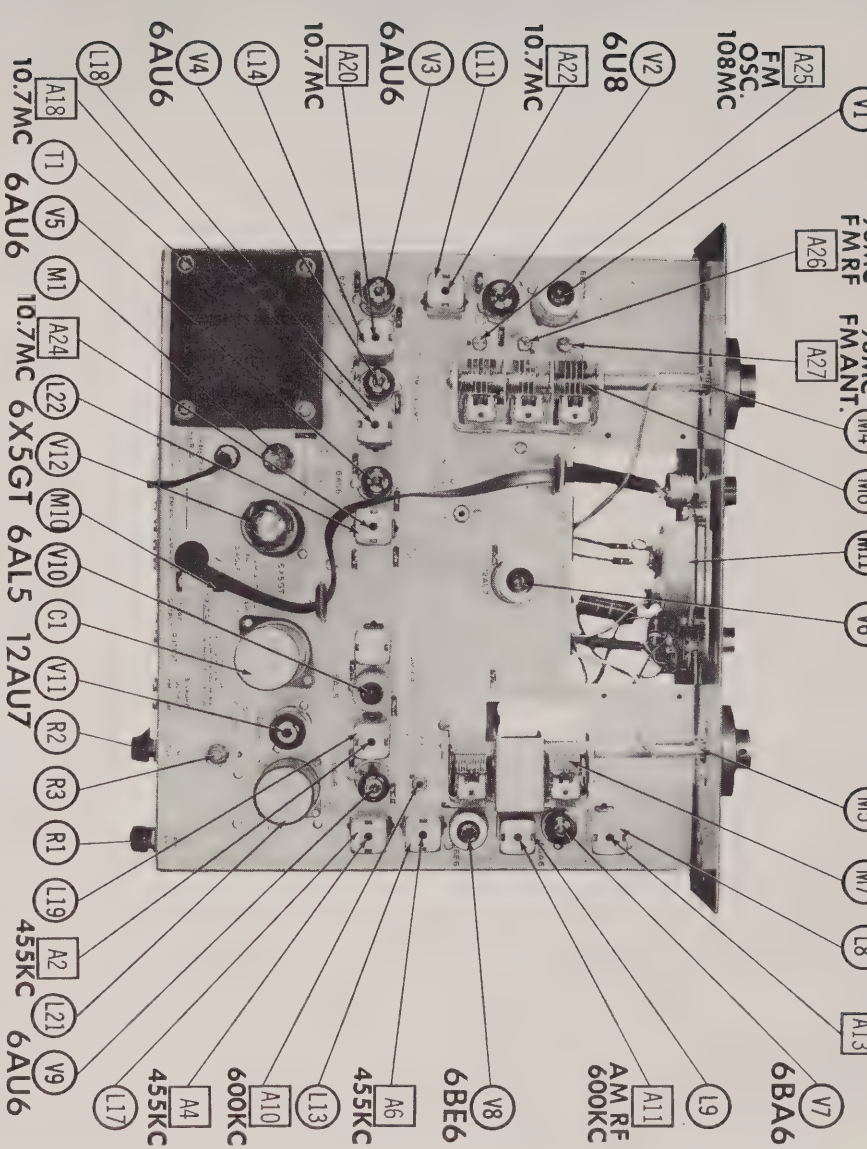
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA H.H. Scott PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C7	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C8	12			SI 12	D6-120	G019	ED-12	UC-5412	5GA-Q12	
C9	1-8						532-B			
C10	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C11	4700			BPD-0047	DD-472	K079	GP-4700	UC-5247	5HK-D47	
C12	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	
C13	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	
C14	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	
C15	2.2			NP0-SI 2.2	TCZ-2R2	Z006	TCO-2.2		5TCCB-V22	
C16	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C17	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	
C18	1-8						532-B			
C19	5			BPD-000005	DD-050	G011	ED-5	ZT-555	5GA-V5	
C20	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	Note 1
C21	10000			BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C22	47000			BPD-05	DF-503					
C23	6.8			NP0-SI 6.8	TCZ-6R8	Z013	TCO-6.8	ZT-5568	5TCCB-V68	
C24	4700			BPD-0047	DD-472	K079	GP-4700	UC-5247	5HK-D47	
C25	4700			BPD-0047	DD-472	K079	GP-4700	UC-5247	5HK-D47	
C26	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C27	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	
C28	10			N750-SI 10	TCN-10	N018	TC7-10	NT-541	5TCU-Q1	
C29	1-8						532-B			
C30	47			SI 47	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C31	10			BPD-00001	DD-100	G018	ED-10	UC-541	5GA-Q1	
C32	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C33	.47				TCZ-R5					
C34A	5000			BPD-2X0047	DD3-502	DK079	GP-4700	DC525	5HK-2D47	
B	5000						GP-4700	DC525		
C35	4700			BPD-0047	DD-472	K079	GP-4700	UC-5247	5HK-D47	
C36	10			BPD-00001	DD-100	G018	ED-10	UC-541	5GA-Q1	
C37A	5000			BPD-2X0047	DD3-502	DK079	GP-4700	DC525	5HK-2D47	
B	5000						GP-4700	DC525		
C38	4700			BPD-0047	DD-472	K079	GP-4700	UC-5247	5HK-D47	
C39A	5000			BPD-2X0047	DD3-502	DK079	GP-4700	DC525	5HK-2D47	
B	5000						GP-4700	DC525		
C40	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C41	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	
C42	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	
C43	4700			BPD-0047	DD-472	K079	GP-4700	UC-5247	5HK-D47	
C44	470			BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C45	.0047	400		BPD-0047	DD-472	CUB6D47	GP-4700	GEM-4247	6TM-D47	
C46	330			BPD-00033	DD-331	G056	ED-330	UC-5333	5GA-T33	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA H. H. Scott PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C47	.0015	400		BPD-0015	DD-152	CUB6D15	GP-1500	GEM-4215	6TM-D15	
C48	.02	400		BPD-02	DD-203	CUB4P2	ED-02	GEM-412	4TM-S2	
C49	100000			P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C50	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C51	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C52	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C53	.0047	400		BPD-0047	DD-472	CUB6D47	GP-4700	GEM-4247	6TM-D47	
C54	2.2			NP0-SI 2.2	TCZ-2R2	Z006	TCO-2.2		5TCCB-V22	
C55	1000			BPD-001	DD-102	K069	ED-1000	DC521	5HK-D1	
C56	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C57	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C58	4700			BPD-0047	DD-472	K079	GP-4700	UC-5247	5HK-D47	
C59	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C60	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C61	47			BPD-000047	DD-470	G033	ED-47	UC-5447	5GA-Q47	
C62	15			BPD-000015	DD-150	G021	ED-15	UC-5415	5GA-Q15	
C63	2.2			NP0-SI 2.2	TCZ-2R2	Z006	TCO-2.2		5TCCB-V22	
C64	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C65	820			BPD-0008	D6-821	K067	ED-820	UC-5382	5GA-T82	
C66	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C67	20000			BPD-02	DD-203	K085	ED-02		5HK-S2	
C68	10			BPD-00001	DD-100	G018	ED-10	UC-541	5GA-Q1	
C69	4700			BPD-0047	DD-472	K079	GP-4700	UC-5247	5HK-D47	
C70	330			BPD-00033	DD-331	G056	ED-330	UC-5333	5GA-T33	
C71	.022	400		BPD-02	DD-203	CUB4S22	ED-02	GEM-4122	4TM-S22	
C72	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C73	180			SI 180	DD-181	G049	ED-180		5GA-T18	
C74	220			BPD-00022	DD-221	G051	ED-220	UC-5322	5GA-T22	Note 1
C75	820			BPD-0008	DD-821	K067	ED-820	UC-5382	5GA-T82	
C76	820			BPD-0008	DD-821	K067	ED-820	UC-5382	5GA-T82	
C77	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C78	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C79	.022	400		BPD-02	DD-203	CUB4S22		GEM-4122	4TM-S22	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA H. H. Scott PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1/3		B-60	A47-500K-Z	Q13-133	U48	AM Level
B	Shaft			Not Req.	RS-2	NotReq.	Not Req.	
R2A	500K	1/3		B-60	A47-500K-Z	Q13-133	U48	FM Level
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R3A	10K	1/3		AB-14	A47-10K-S	Q11-116	U20	10KC Filter
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H. H. Scott PART No.	IRC PART No.	NOTES
R4	1Meg			BTS-1Meg	
R5	4700Ω	2		BTB-4700	
R6	270Ω			BTS-270	
R7	1Meg			BTS-1Meg	
R8	68Ω			BTS-68	
R9	10K			BTS-10K	
R10	4700Ω			BTS-4700	
R11	220Ω			BTS-220	
R12	470K			BTS-470K	
R13	68Ω			BTS-68	
R14	2.7Ω	1		BTA-2.7	
R15	47K			BTS-47K	
R16	470K			BTS-470K	
R17	68Ω			BTS-68	
R18	220Ω			BTS-220	
R19	220Ω			BTS-220	
R20	33K			BTS-33K	
R21	47K			BTS-47K	
R22	47K			BTS-47K	
R23	10K			BTS-10K	
R24	22K	1		BTA-22K	
R25	2200Ω	2		BTB-2200	
R26	390Ω			BTS-390	
R27	47K			BTS-47K	
R28	270Ω			BTS-270	
R29	3900Ω			BTS-3900	
R30	270K			BTS-270K	
R31	2700Ω			BTS-2700	
R32	120K			BTS-120K	
R33	1Meg			BTS-1Meg	
R34	47K	1		BTA-47K	
R35	1000Ω			BTS-1000	
R36	2.2Meg			BTS-2.2Meg	
R37	100K			BTS-100K	
R38	22K			BTS-22K	
R39	18Ω			BTS-18	
R40	470K			BTS-470K	
R41	1000Ω			BTS-1000	
R42	1000Ω			BTS-1000	
R43	68Ω			BTS-68	
R44	3.3Ω	1		BTA-3.3	
R45	10Ω			BTS-10	
R46	22K			BTS-22K	
R47	4700Ω	1		BTA-4700	
R48	1Meg			BTS-1Meg	
R49	27Ω			BTS-27	
R50	680Ω			BTS-680	
R51	68Ω			BTS-68	
R52	220K			BTS-220K	
R53	2.2Meg			BTS-2.2Meg	
R54	22Meg			BTS-22Meg	
R55	270K			BTS-270K	
R56	680K			BTS-680K	
R57	4.7Meg			BTS-4.7Meg	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H. H. Scott PART No.	IRC PART No.	NOTES
R58	100K			BTS-100K	
R59	4700Ω			BTS-4700	
R60	6800Ω			BTS-6800	
R61	470K			BTS-470K	
R62	1Meg			BTS-1Meg	
R63	33K			BTS-33K	
R64	10K			BTS-10K	
R65	68K			BTS-68K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H. H. Scott PART No.	IRC PART No.	NOTES
R66	47K	1		BTA-47K	
R67	1000Ω			BTS-1000	
R68	2.2Meg			BTS-2.2Meg	
R69	6800Ω			BTS-6800	
R70	22K			BTS-22K	
R71A	250Ω	10		PW10-250	
B	250Ω	10		PW10-250	
C	250Ω	10		PW10-250	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA H. H. Scott PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @.52A	420VCT @.076A	6.3VAC @3.9A	6.3VAC @.52A	TR8-2					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA H. H. Scott PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	RF Choke		19-1000		4602	1 Microhenry
L2	FM Ant. Coil					
L3	Cathode Choke					1.2 Microhenries
L4	RF Choke					.33 Microhenry
L5	RF Choke		19-1000		4602	1 Microhenry
L6	FM RF Coil					
L7	FM Osc. Coil					
L8	AM Ant. Coil	TRV-AM-A				
L9	AM RF Coil	TRV-AM-M				
L10	AM Osc. Coil	17455-1				
L11	1st. FM IF	TRV-10.7-1	16-3487	FM-254	1463	
L12	Fil. Choke		19-1000		4602	1 Microhenry
L13	1st. AM IF	TRVS-455 IF				
L14	2nd. FM IF	TRV-10.7-1	16-3487	FM-254	1463	
L15	Fil. Choke		19-1000		4602	1 Microhenry
L16	Fil. Choke		19-1000		4602	1 Microhenry
L17	2nd. AM IF	TRVS-455 IF				
L18	3rd. FM IF	TRV-10.7-1	16-3487	FM-254	1463	
L19	3rd. AM IF	TRV-455 D	16-6758	BC-353	12-C2	
L20	IF Trap	TRV-455 T				
L21	10KC Filter					
L22	Ratio Det.	TRV-10.7D	17-3498	FM-255	1465	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA H. H. Scott PART No. FUSE	H. H. Scott PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	1 1/4A 125V			3131.25 (3AG S/B 1 1/4A)	342003	MDL 1 1/4	HKP

CRYSTAL DIODES

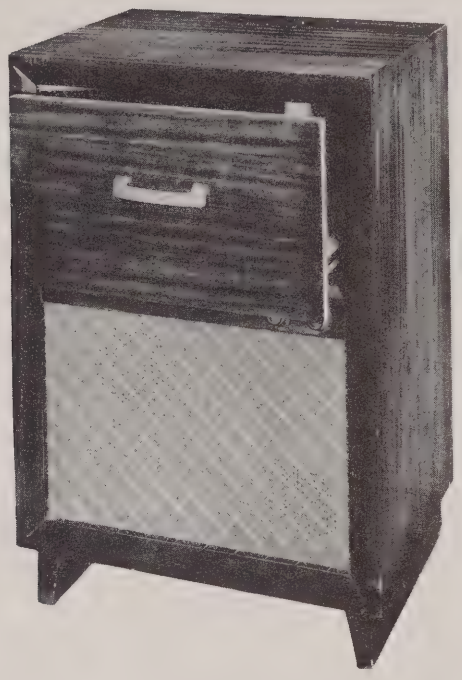
ITEM No.	ORIG. TYPE	REPLACEMENT DATA H. H. Scott PART No.	REPLACEMENT DATA SYLVANIA PART No.	NOTES
M2	1N294		1N34A	
M3	1N294		1N34A	

MISCELLANEOUS

ITEM No.	PART NAME	H. H. Scott PART No.	NOTES
M4	Lamp		FM Dial, #44
M5	Lamp		AM Dial, #44
M6	Tuning Cap.	CAV3X16-P1	FM, 3 gang
M7	Tuning Cap.	CAV3XAMP-1	AM, 3 gang (23-385MMF, 19-380MMF, 35-235MMF)
M8	Switch		Function Selector, wafer type
M9	Switch		Meter (DPDT Slide Type)
M10	Switch		Ant. (DPDT Slide type)
M11	Meter		Tuning Indicator
M12	Switch		Off-off

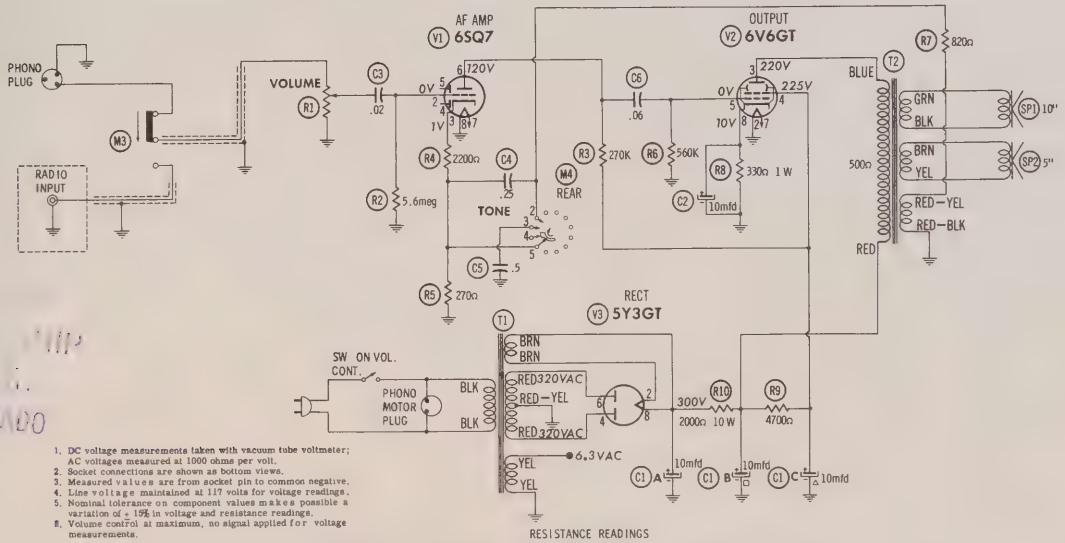
SILVERTONE
MODEL 3250 (Ch. 137.917)

SILVERTONE
MODEL 3250 (Ch. 137.917)



TRADE NAME	Silvertone Model 3250 (Ch. 137. 917)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	AC Operated Audio Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 6SQ7 AF Amplifier, 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .41 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE SIMILAR V-M MODEL 950- PHOTOFACT SET 216 FOLDER 11 OR RECORD CHANGER MANUAL CM-5.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6SQ7	0Ω	5.6Meg	2500Ω	NC	NC	†275K	.1Ω	0Ω
V2	6V6GT	NC	0Ω	†2500Ω	†6700Ω	560K	NC	.1Ω	330Ω
V3	5Y3GT	NC	50K	NC	170Ω	NC	170Ω	NC	50K

† MEASURED FROM PIN 8 OF V3.
NC NO CONNECTION.

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	6SQ7	
V2	Output	6V6GT	
V3	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	10	450	C11334	AFH3-31	CO240	FP375.8	TMT-32	T-125	TVL-3776
B	■10	450							
C	▲10	450							
C2	10	25	C11389	PRS25V10	BBR10-25	TC22	TD-10-25	FM-0210	TVA-1204

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.02	200	C10497	BPD-02	DD-203	CUB2S2	ED-02	GEM-412	2TM-S2	
C4	.25	200	C10858	P288N-25		CUB2P25		GEM-2025	2TM-P25	
C5	.5	200	C11386	P288N-5		CUB2P5		GEM-205	2TM-P5	
C6	.06	200	C10502	P288N-06		CUB6S6		GEM-416	6TM-S6	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	C10496	AB-76	AG-66-2	Q13-129	U55	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWB	76-1	US-26	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	5.6Meg		C10301	BTS-5.6Meg	
R3	270K		C8841	BTS-270K	
R4	2200Ω		C10986	BTS-2200	
R5	270Ω		C10942	BTS-270	
R6	560K		C8842	BTS-560K	
R7	820Ω		C11387	BTS-820	
R8	330Ω	1	C8843	BTA-330	
R9	4700Ω		C10429	BTS-4700	
R10	2000Ω	10	C11388	PW10-2000	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .41A	605VCT @ .040A	5VAC @ 2A	6.3VAC @ .72A	C11338	P9300	P-3150	PC-8406	24R01U	R-7A

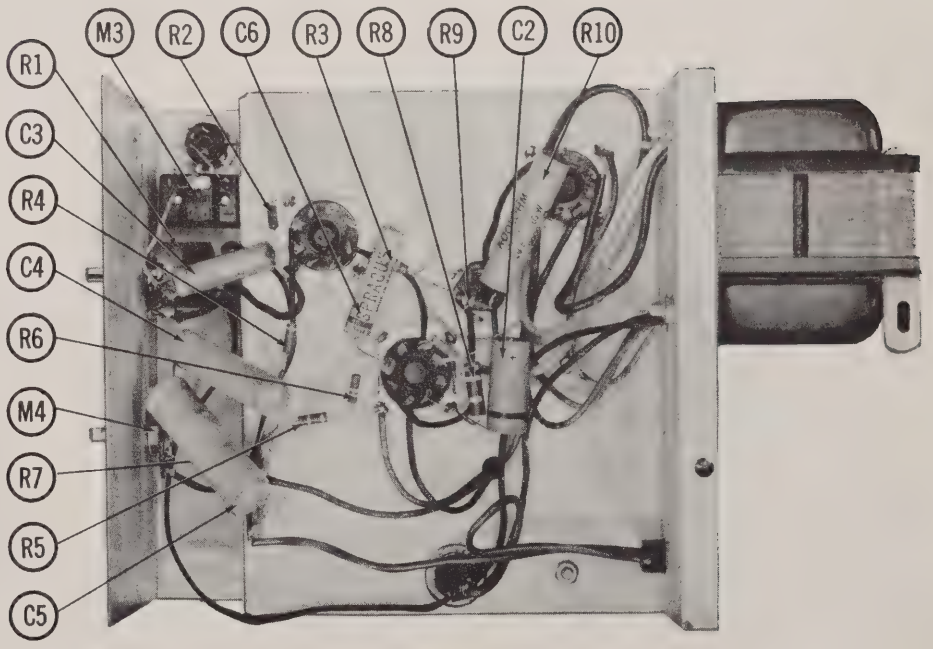
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4450Ω	3-4Ω SEC. 2 3-4Ω SEC. 3 13Ω Res.	C11339						

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	10"	PM	3-4Ω	C11337	10A31	
SP2	5"	PM	3-4Ω	C11356	5A15TZ3	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	C11406	55-T	GD-J	56	PT-2	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

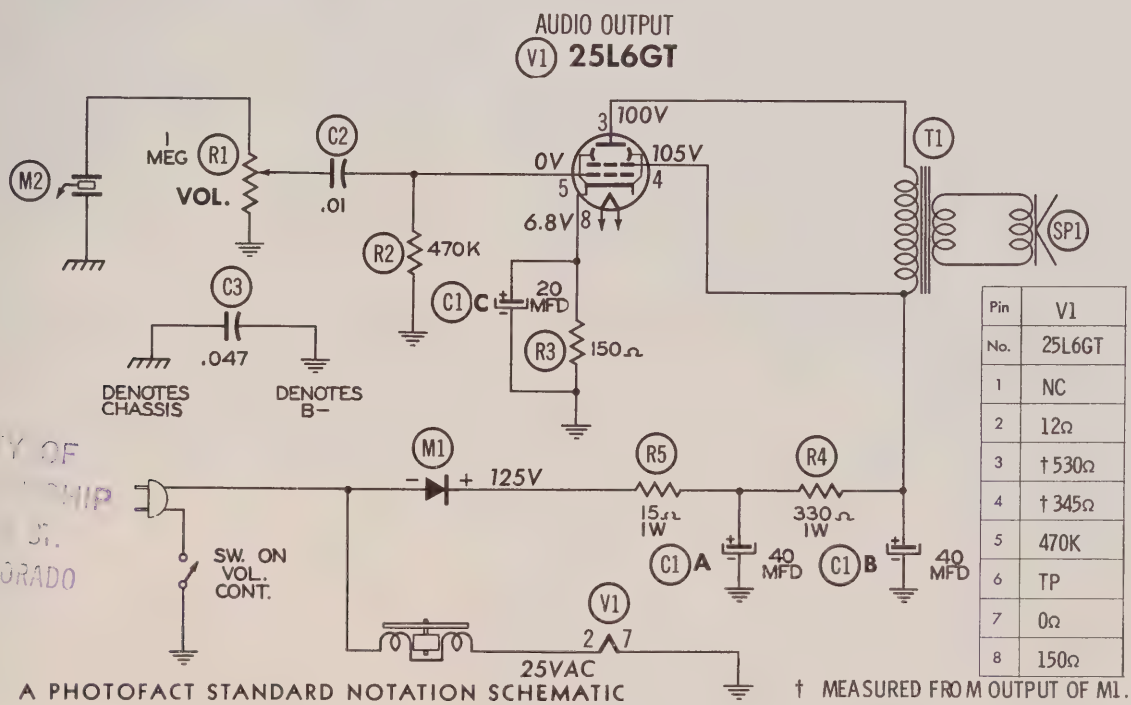
ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	C11407	†S-66 or ♦†S-66SD or ♦S-66D	†W-75TPS or ♦†W-75DS or ♦W-75TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Switch	C11396	Radio Tuner - Phono (SPDT - Toggle Type)
M4	Switch	C10879	Tone (SP - 3 Position; Rotary, Wafer Type)
	Cabinet	C11399	
	Knob	C11393	Control (2 used)

STEELMAN
MODELS 3S5, 3S6

TRADE NAME	Steelman Models 3S5, 3S6
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 25L6GT Output
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING .36 Amp. @ 117 Volts AC



Pin No.	V1 25L6GT
1	NC
2	12Ω
3	†530Ω
4	†345Ω
5	470K
6	TP
7	0Ω
8	150Ω

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† MEASURED FROM OUTPUT OF M1.
TP TIE POINT
NC NO CONNECTION

...Y OF
...SHIP
...ST.
DENVER, COLORADO

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25L6GT	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V4040	BBRT44215	TCT3116	TDLT-4	FMT-312	TVA-3448
B	40	150		20					
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.01	400		BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C3	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½		AB-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch			KB-1	SWE-12	76-1	US-26	Attach to R1A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	STEELMAN PART No.	IRC PART No.	
R2	470K			BTS-470K	
R3	150Ω			BTS-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	STEELMAN PART No.	IRC PART No.	
R4	330Ω	1		BTA-330	
R5	15Ω	1			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2000Ω	3.1Ω		Z1101	A-3025	A-3332	24S50 ①	S-12X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.		
SP1	4"	PM	3.1Ω		4A07		

SELENIUM RECTIFIER

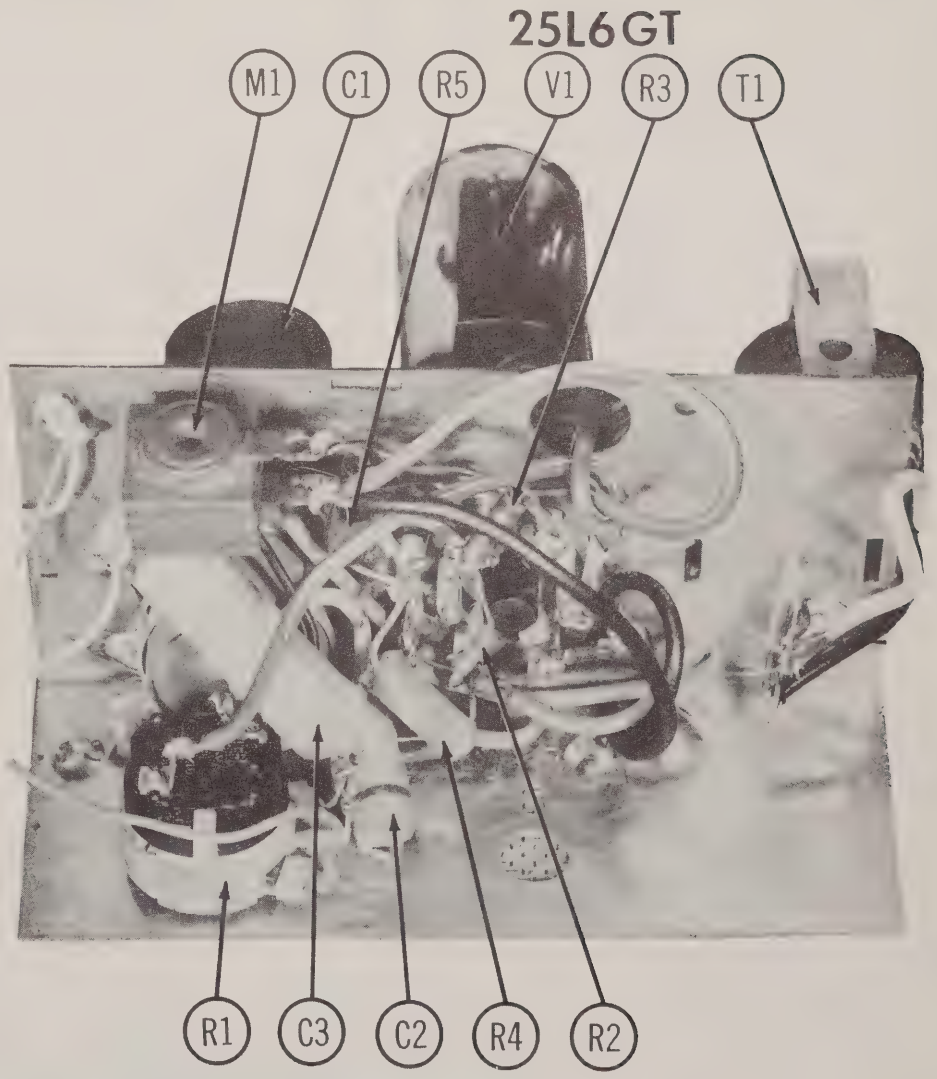
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	STEELMAN PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.049A		1263A	RS050	6S65	8J1	65	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	STEELMAN PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		106	N6-2			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—BOTTOM VIEW

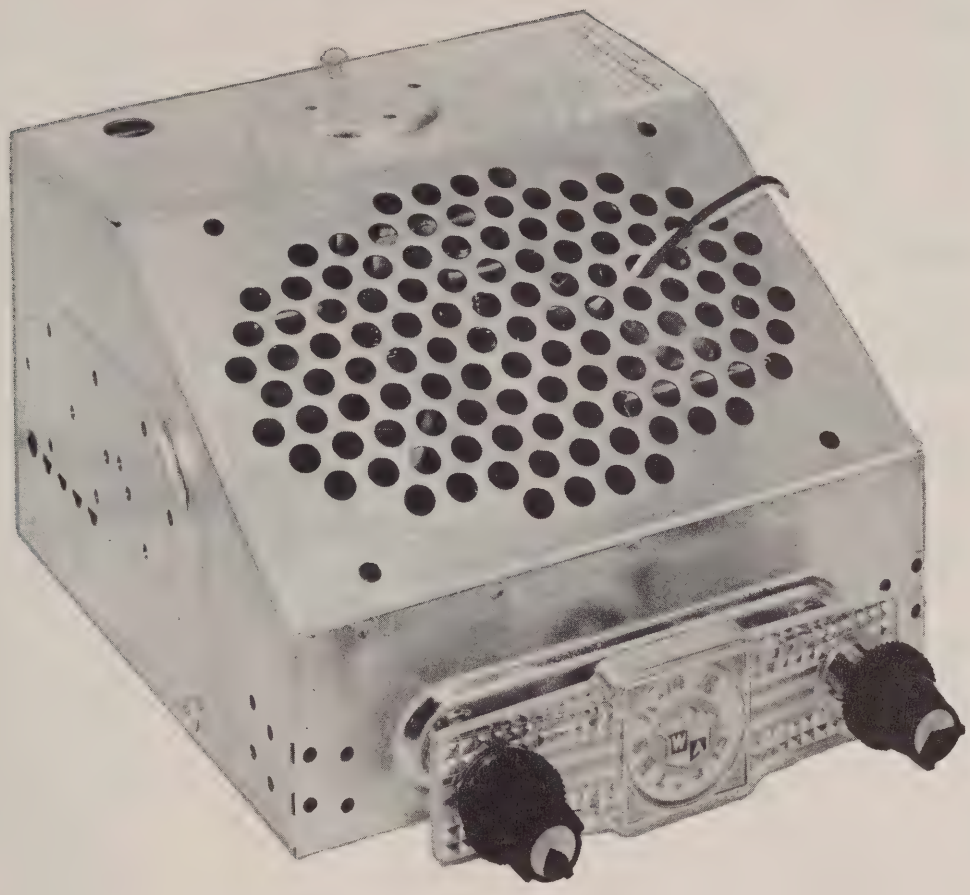


PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	STEELMAN PART No.	JENSEN PART No.	WALCO PART No.	
M3		*W-122		* Metal

TRUETONE MODELS
D4625A, D4626A



TRUETONE MODELS
D4625A, D4626A

TRADE NAME	Truetone Models D4625A (6 Volt), D4626A (12 Volt)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Battery Operated Universal Type AM Automobile Receiver
TUBES	Eight
POWER SUPPLY	12 Volt Storage Battery (Model D4626A) RATING 4.5Amp. @ 12.6Volts DC (Model D4626A) 6 Volt Storage Battery (Model D4625A) 9Amp. @ 6Volts DC (Model D4625A)
TUNING RANGE—BROADCAST	540KC - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Tuner cores are preset and sealed by manufacturer; therefore core adjustment is not necessary.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	455KC (400% Mod)	Tuning control fully counter-clockwise. (Cores out.)	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	A5	"
3.	50MMF	High side thru dummy to antenna receptacle. Low side to chassis.	1400KC	Tune to 1400KC signal.	"	A6, A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BD6	Note 1
V2	Converter	12BE6	Note 1
V3	IF Amplifier	12BD6	Note 1
V4	Det-AVC-AF Amp.	12CR6	Note 1
V5	Phase Inverter	6C4	
V6	Output	12AS5	Note 1
V7	Output	12AS5	Note 1
V8	Rectifier	12X4	Note 1

Note 1: Equivalent 6Volt type tubes used in model D4625A.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
CIA	■30	200	8C-23993	AFH3-86-50	CO630	FP318.3		T-320	TVL-3464
B	▲20	200							
C	40	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	90		8F-21949							
C3	.0047	200	8D-21819	BPD-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C4	10		8G-19502	N750-SI 10	TCN-10	TN09	N750A-100	NT-541	5TCU-Q1	
C5	.047	200	8D-21823	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C6	47		8G-12198	N750-SI47	TCN-47	TN14	N750K-470	NT-5447	5TCU-Q47	
C7	220	500	8N1-233	NP0-SI220	TCZ-220	22R5T22	NP0-335-221		MS-322	
C8	.022	200	8D-21822	BPD-02	DF-203	CUB4S22	817-02	PT4122	2TM-S22	
C9	.01	200	8D-21820	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C10	.047	200	8D-21823	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C11	.0022	200	8D-21818	BPD-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C12	.022	200	8D-21822	BPD-02	DF-203	CUB4S22	817-02	PT4122	2TM-S22	
C13	.022	200	8D-21822	BPD-02	DF-203	CUB4S22	817-02	PT4122	2TM-S22	
C14	.0022	600	8D-23996	BPD-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C15	.01	1000	8D-21836	P1088N-01	DD16-103	CUB16S1		PT1611	10TM-S1	
C16	.047	400	8D-21831	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C17	.5	100	8D-19810	VHC36		ST2P5		RF480	68P20	Note 1
C18	.5	100	8D-24956	VHC36		ST2P5		RF480	68P20	
C19	1000		8G-22721							
C20	.5	100	8D-19810	VHC36		ST2P5		RF480	68P20	

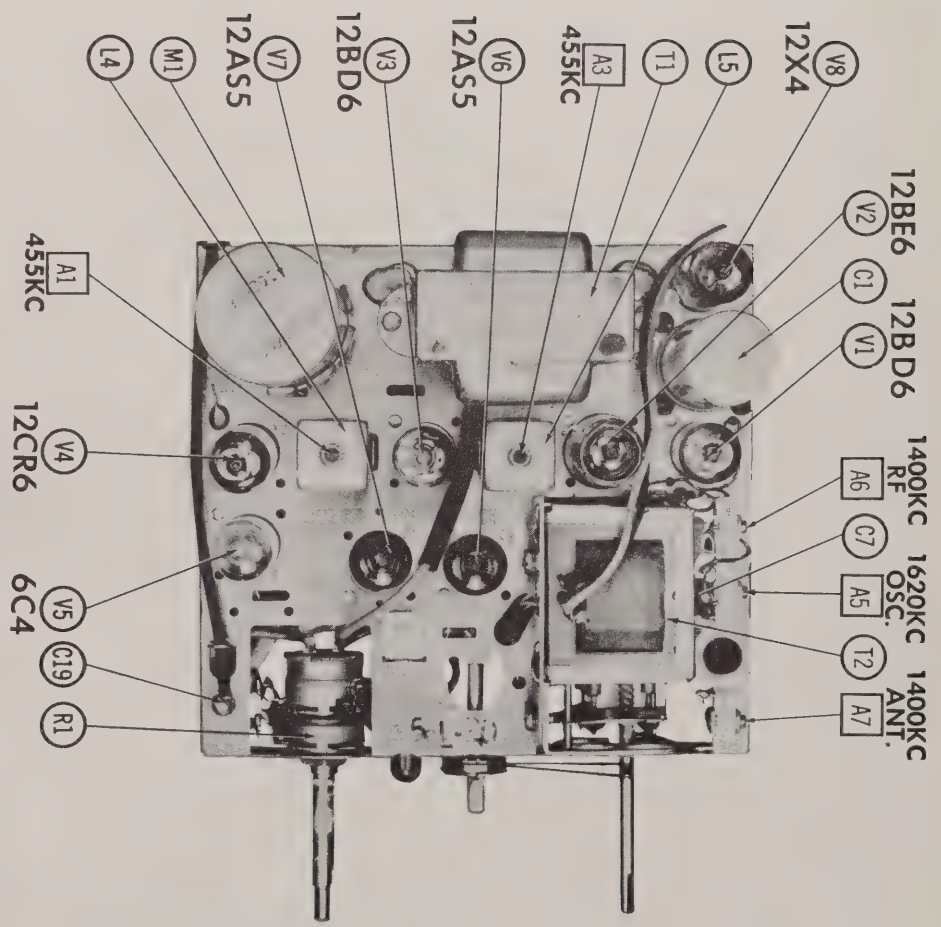
Note 1. Not used in model D4625A.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	B10A-26697	F1-51	RTV-592C	♦QJ-1030A	UF16L	Tone (Panel)
B	500K	½		R2-45			UR55-T254	Volume, Tap ② 150K (Rear)
C	Switch			KB-4			US-26	Attach to R1B

♦Concentrikit Equivalent: Kit K-6, Base Elements & Shafts, B11-137 & P13-118 (Panel)
B13-133X & R1-130 (Rear)
76-1 (Switch)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	1Meg		9B1-98	BTS-1Meg	
R3	220Ω		9B1-54	BTS-220	
R4	1Meg		9B1-98	BTS-1Meg	
R5	1Meg		9B1-98	BTS-1Meg	
R6	47K		9B1-82	BTS-47K	
R7	220Ω		9B1-54	BTS-220	
R8	22K		9B1-21	BTS-22K	
R9	2.2Meg		9B1-102	BTS-2.2Meg	
R10	1Meg		9B1-98	BTS-1Meg	
R11	56K 5%		9B1-201	BTS-56K 5%	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R12	51K 5%		9B1-200	BTS-51K 5%	
R13	3300Ω 5%		9B1-171	BTS-3300 5%	
R14	470K		9B1-94	BTS-470K	
R15	470K		9B1-94	BTS-470K	
R16	200Ω 5%	1	9B2-142	BTA-200 5%	
R17	1200Ω	2	9B4-63	BTB-1200	
R18	4700Ω		9B1-70	BTS-4700	
R19	150Ω	1	9B2-52	BTA-150	Note 1
R20	150Ω	1	9B2-52	BTA-150	Note 1
R21	39Ω 5%	1	9B2-125	BTA-39 5%	Note 2

Note 1. Model D4625A uses 56Ω in this application. (Part #9B1-47)
Note 2. Not used in model D4625A.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	12.6VCT @2.08A	365VCT @.074A			12A-24954					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5500Ω CT	3-4Ω	12C-24015	Z1002 ①	A-2901 ①	A-3852 ①	24S61 ①	S-53X ①	① Bend ears down to fit.

SPEAKER

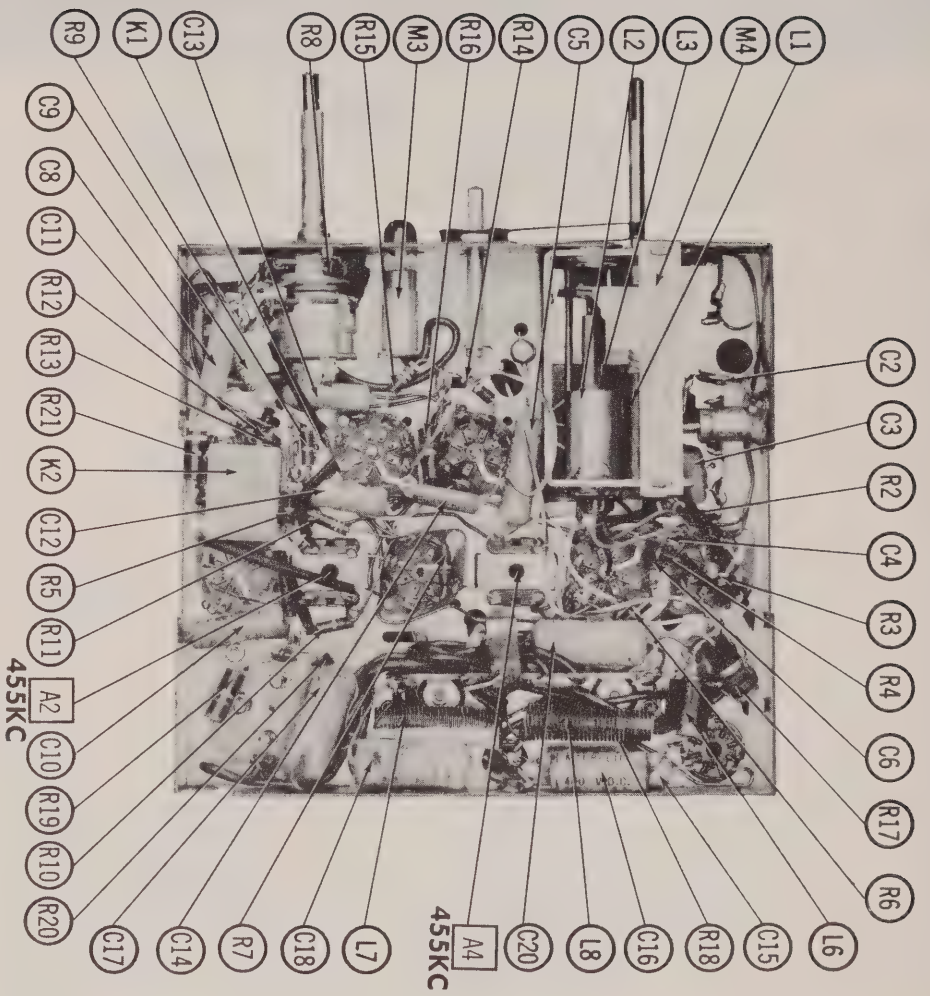
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	RCA TYPE No.	
SP1	6" X 9"	PM	3-4Ω	18A-24035	69A2	238S1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1Ω						Note 1
L2	RF Coil	1Ω						Note 1
L3	Osc. Coil	.5Ω	5Ω					Note 1
L4	Input IF	13Ω	13Ω	13B-17731	16-6758	BC-352	12-C1	
L5	Output IF	13Ω	13Ω	13B-17731	16-6758	BC-353	12-C2	
L6	RF Choke	18Ω		16A-24018				
L7	Fil. Choke	.1Ω		16M-19921				
L8	Vib. Hash Choke	.1Ω		16M-19921				

Note 1. Complete assembly part #13F-21922-1.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K1	Detector RF Filter	100MMF, 100MMF, 47K	201-15005	Aerovox	PA-97-1
				Centralab	PC-50
				Cornell-Dubilier	111TM1
				Erie	1403-01
				Sprague	D-1
K2	Audio Coupling Net.	10000MMF, 250K, 500K	17A-26694	Aerovox	PA-112-4
				Centralab	PC-81
				Cornell-Dubilier	113TM2
				Erie	1404-02
				Sprague	T-2

VIBRATOR

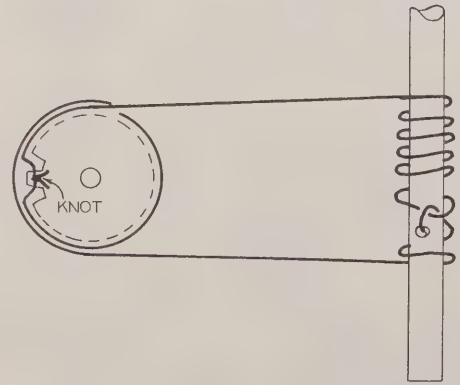
ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				TRUETONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6V	115∿	21B-24952	6301	G859	6301	Model D4626A
	Interrupter	6V	115∿	21B-23296	5301	859	5301	Model D4625A

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	46B17993		307014. (SFE-14A)	155014	SFE14	HRI

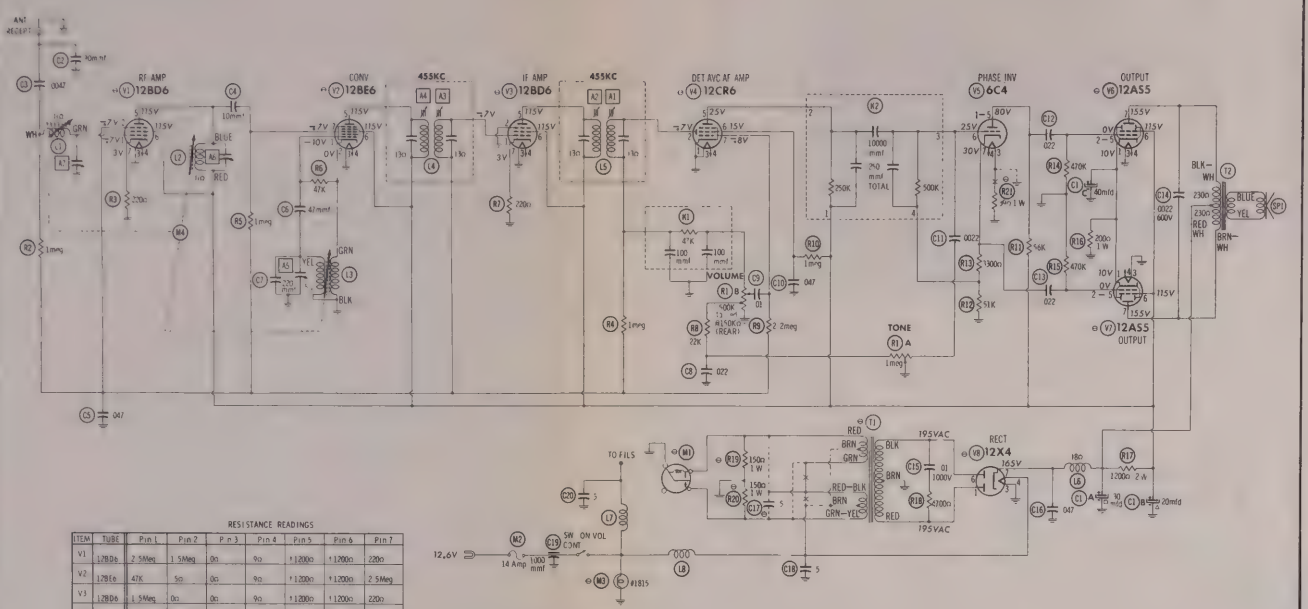
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Dial Light	46A-22534	#1815, Model D4626A
	Dial Light	46A-11739	#44, Model D4625A
M4	Tuner	13F-21922-1	Permeability (Complete) Includes L1, L2 and L3.
A5	Trimmer Cap.	8E-21728	Osc.
A6	Trimmer Cap.	8E-21728	RF
A7	Trimmer Cap.	8E-21728	Ant.
	Knob	200-26723	On-Off-Volume
	Knob	200-26724	Tuning
	Knob	5B-26700-A93	Tone
	Dial Scale	5M-21796-A118	



DIAL CORD STRINGING, TUNING SLUGS SET AT LOWEST FREQUENCY.

DIAL CORD STRINGING



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BD6	2.5Meg	1.5Meg	0Ω	0Ω	9Ω	†1200Ω	220Ω
V2	12BE6	47K	5Ω	0Ω	0Ω	9Ω	†1200Ω	†1200Ω	2.5Meg
V3	12BD6	1.5Meg	0Ω	0Ω	0Ω	9Ω	†1200Ω	†1200Ω	220Ω
V4	12CR6	0Ω	550K	0Ω	9Ω	†250K	1.1Meg	3.7Meg
V5	6C4	†56K	NC	9Ω	10Ω	†56K	550K	53K
V6	12AS5	200Ω	470K	0Ω	9Ω	470K	†1200Ω	†250Ω
V7	12AS5	200Ω	470K	0Ω	9Ω	470K	†1200Ω	†250Ω
V8	12X4	150Ω	NC	0Ω	9Ω	NC	130Ω	100K

† MEASURED FROM PIN 7 OF V8.
NC NO CONNECTION

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on components values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

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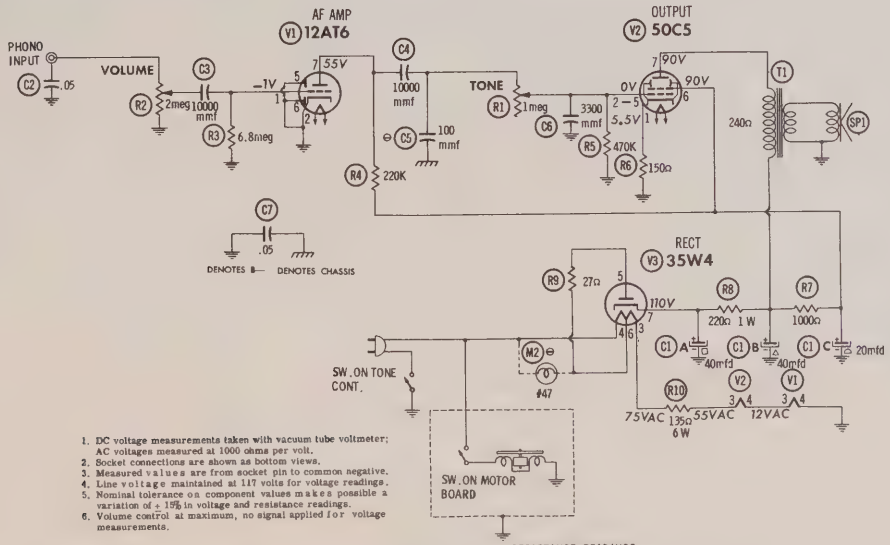
RETMA MEMBER

WEBCOR
MODEL GT1651

WEBCOR
MODEL GT1651

TRADE NAME	Webcor Model GT1651
MANUFACTURER	Webcor Inc., 5610 Bloomingdale Ave., Chicago 39, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AT6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .20 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE WEBCOR MODEL 141 - PHOTOFACT SET 321 - FOLDER 13.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AT6	6.8Meg	0Ω	12Ω	0Ω	0Ω	0Ω	†220K
V2	50C5	150Ω	470K	60Ω	12Ω	470K	†1200Ω	†460Ω
V3	35W4	NC	NC	200Ω	240Ω	265Ω	235Ω	15K

† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AT6	
V2	Output	50C5	
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	150	30P243	AFH3-43-50		FP376.9			
B	▲40	150							
C	●20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	WEBCOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	400	30P255	BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C3	10000		30P256	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C4	10000		30P254	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C5	100			SI 100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	Note 1
C6	3300		30P253	SI3300	D6-332	TP61	GP2-333-332	UC-5233	5HK-D33	
C7	.05	400	30P255	BPD-05		CUB4S5		PT415	4TM-S5	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	½	31P082					Tone & Switch
R2	2Meg	½	31P083					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	WEBCOR PART No.	IRC PART No.	
R3	6.8Meg		29S6852	BTS-6.8Meg	
R4	220K		29S2242	BTS-220K	
R5	470K		29S4742	BTS-470K	
R6	150Ω		29M1512	BTS-150	
R7	1000Ω		29S1022	BTS-1000	
R8	220Ω	1	29S2213	BTA-220	
R9	27Ω		29M2702	BTS-27	
R10	135Ω	6	29P065		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2600Ω	3-4Ω	67P035 67P047 ①	Z1001	A-2928	A-3876	24S50	S-1X	① Alternate part no.

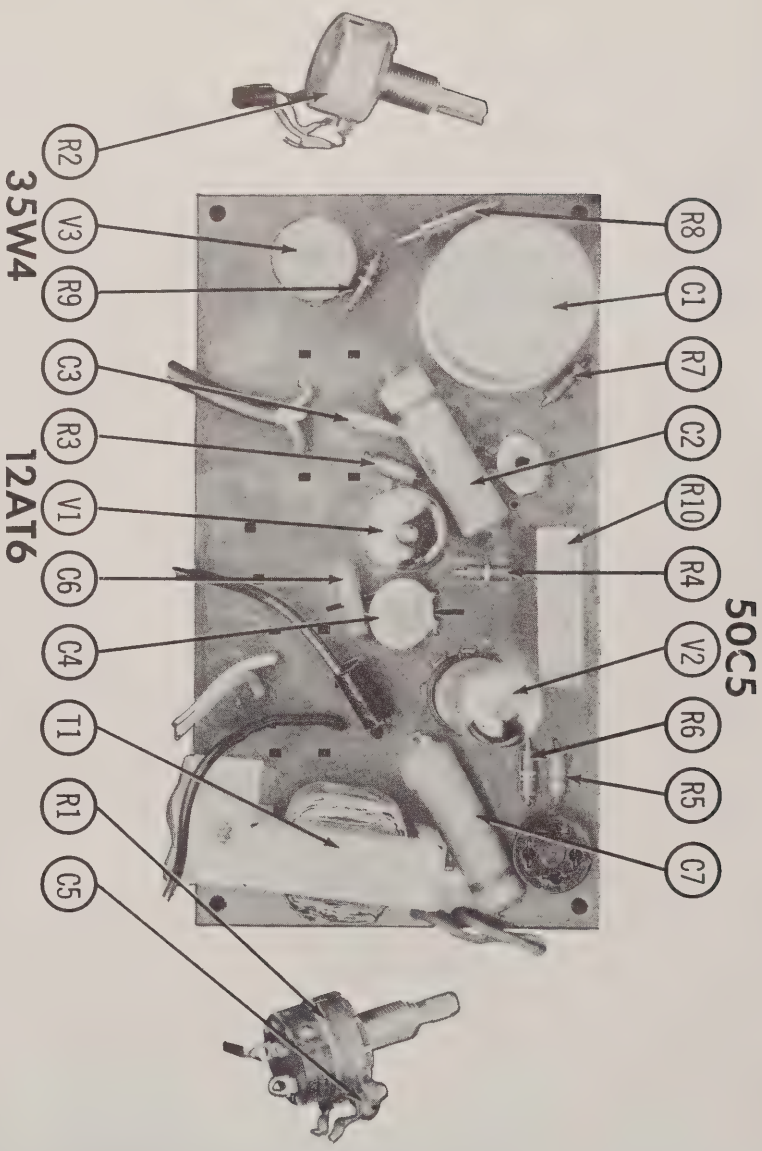
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	WEBCOR PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	76P011	5A07	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	WEBCOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1				76S or 76DS		

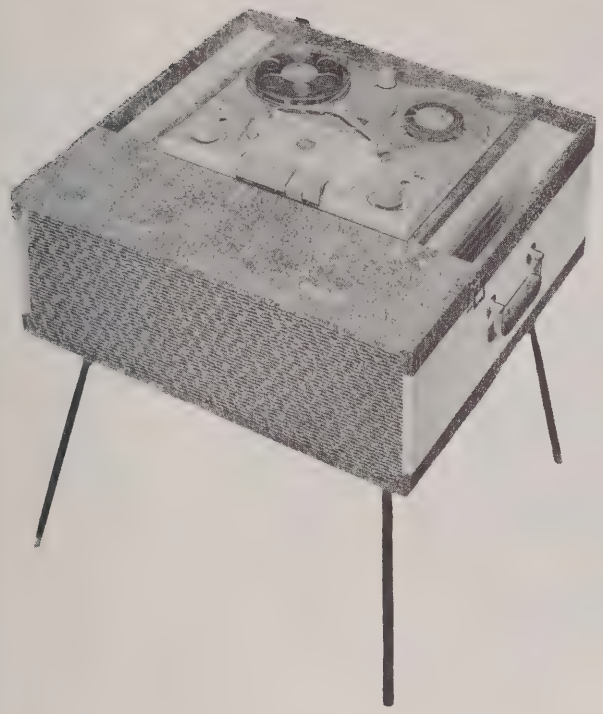
CHASSIS—TOP VIEW



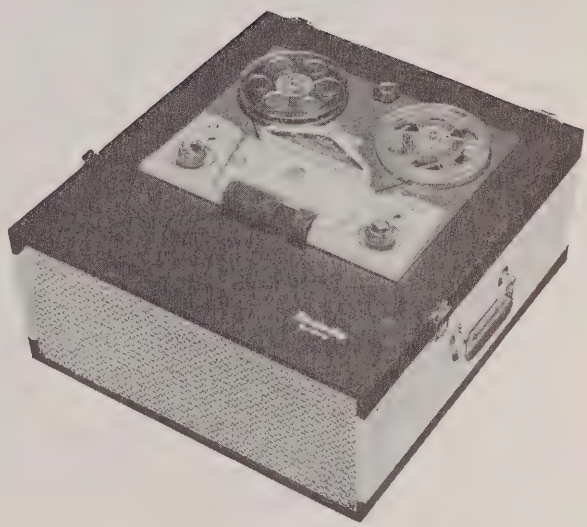
MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M2	Pilot Light		#47; Not used in some versions.
	Knob	39P142-1LS	Volume
	Knob	39P142-2LS	On-Off-Tone

RETMA MEMBER
RADIO-ELECTRONICS-TELEVISION MANUFACTURERS ASSOCIATION



MODEL 674



MODEL 651

WILCOX-GAY
MODELS 651, 674

WILCOX-GAY
MODELS 651, 674

GENERAL INFORMATION

Wilcox-Gay "Recordio" Models 651 and 674 are mechanically alike. The major difference between the two models is in the amplifiers used. Notice the difference in the schematics located toward the rear of this manual.

Models 651 and 674 features fingertip operation for Fast Forward, Playback, Stop, Record, and Fast Reverse. These recorders are designed to record and playback two tracks of material on standard width recording tape. Any reel size up to 7" can be used. Two neon recording indicators simplify the recording level setting. New recordings can be made on previously recorded tape since the erase head is automatically positioned when the "Record" button is pressed, or the same recording may be played back indefinitely. Recordings can be made from radio, television receiver, or phonograph, in addition to those made directly from the microphone. Recordings can be played back through the self-contained speakers, or an external speaker may be used by connecting to the "Ext. Spkr. " jack.

Recordio Models 651 and 674 have two tape speeds, 3 3/4" and 7 1/2" per second. Using both tracks of the tape the recording time is as follows:

SIZE	3 3/4" SPEED	7 1/2" SPEED
5" reel (600 ft.)	1 hour	1/2 hour
7" reel (1200 ft.)	2 hours	1 hour

These units are designed to operate on 60 cycle, 115 volts, AC supply only. Before connecting to your line supply, be absolutely certain that it agrees with the above specifications.

Manufactured by:
Wilcox-Gay Corporation
Charlotte, Michigan

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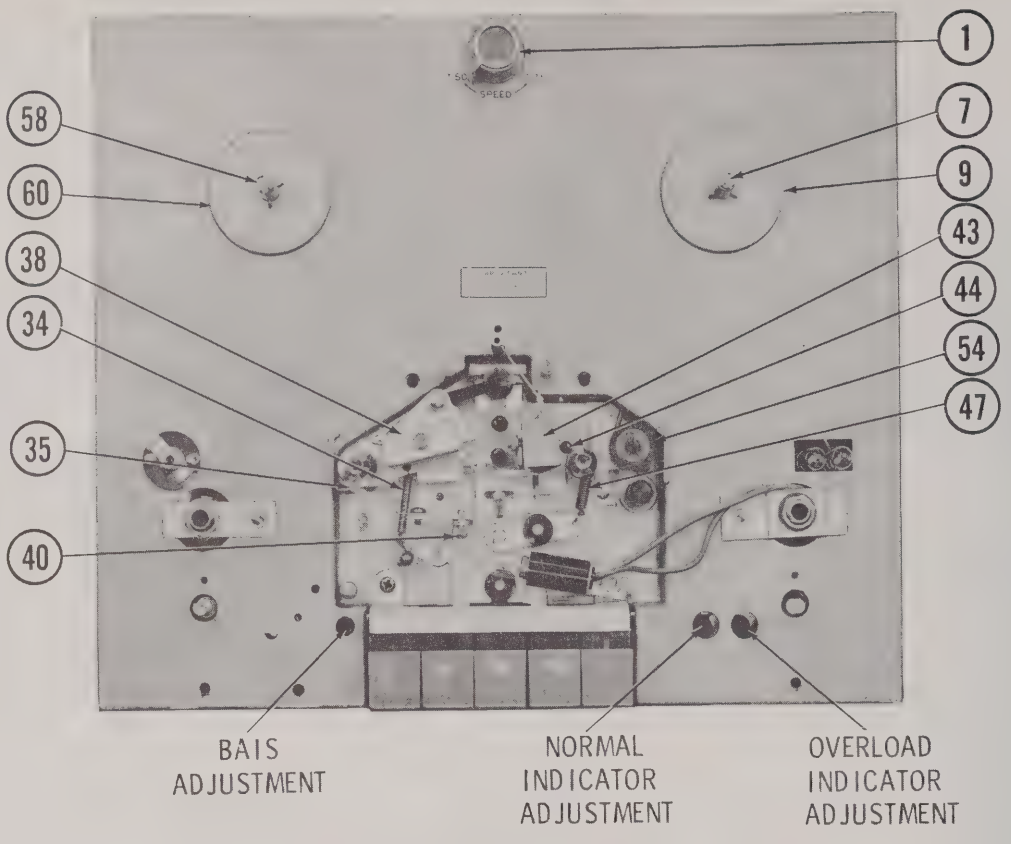


FIGURE 1

OPERATING INSTRUCTIONS

Preparation For Operation-

1. Remove the AC power cord, 5" reel of tape, empty reel and the microphone from the storage compartment.

2. Depress the "Stop" button.

3. Plug the AC cord into a convenient wall receptacle of the proper rating.

4. Set speed changer knob to 7.50 or 3.75 as desired.

5. Place Remote - Normal switch in Normal position.

CAUTION: Do not turn speed change knob unless "Stop" button is depressed.

When the Forward or Reverse buttons are depressed, the Record and Play button are locked so that they cannot be pressed down, with the possibility of spilling tape. The buttons should always be pressed down firmly until they latch and the Stop button must be depressed before changing functions or speeds of the recorder.

IMPORTANT: Always depress the Stop button when the machine is not in use.

Speed Change Knob-

The arrow on the speed change knob should point at 7.50 or 3.75 according to the speed desired. These recorders have two speeds, 7 1/2" and 3 3/4" per second. The arrow pointing at 7.50 means the unit will operate at the fast speed or 7 1/2" per second.

CAUTION: Turning the speed change knob while the unit is operating will not change the speed. The Stop button must be depressed before the speed can be changed.

Threading The Tape-

1. Place a full reel of tape on the left supply spindle, making certain one of the reel slots catch the protrusions of the pan. Unwind about 14" of tape from the supply reel.

2. Insert free section of tape into the tape slot.

3. Insert free end of tape into one of the three slots in the hub of the right (take-up) reel and while holding the tape in place give the reel two or three turns until the tape is secured.

4. The dull side of the tape should always face away from the operator (rear of unit).

To Record From Microphone-

1. Turn the On-Off Volume control to the right until a click is heard and allow about 30 seconds for the unit to warm up. The pilot light located above the stop button will glow when the unit is turned on.

2. Insert the microphone plug into the "Microphone" input.

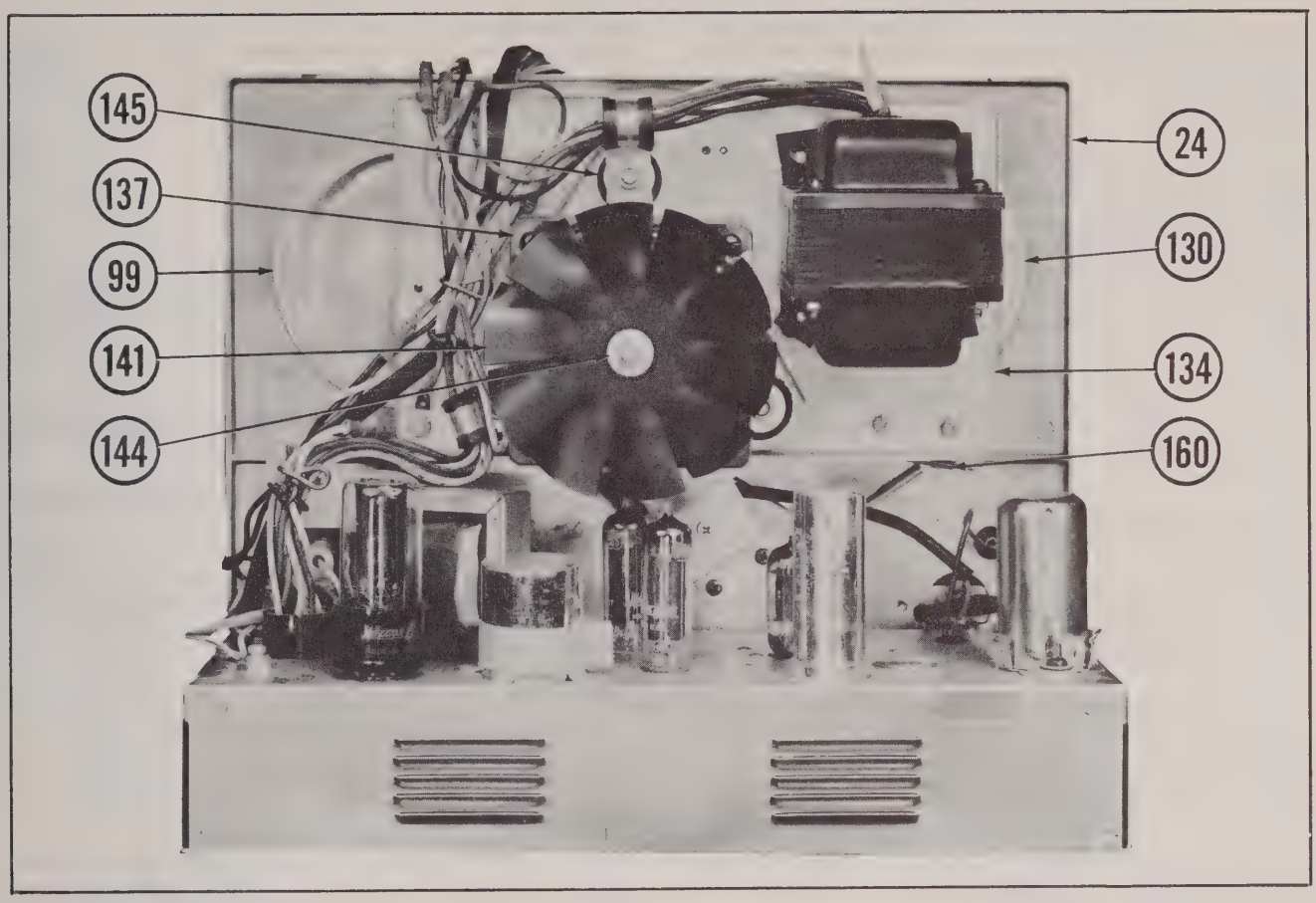


FIGURE 2

3. Move the record lock button (65) downward with the left hand. This releases the safety lock which prevents accidental erasure.

4. Depress the "Record" button with the right hand (while holding record lock button (65) with the left hand) until it latches.

5. Adjust the "Volume" control until the "Normal" indicator just flashes, while speaking into the microphone. When the "Volume" control is advanced too far the "Overload" indicator will flash and the recording will be distorted. To prevent overload, lower the "Volume" control to a point where the "Overload" indicator will not flash.

6. The "Tone" control does not operate during recording. When recording from radio, set the radio "Tone" control for maximum treble.

To Record From External Radio, TV, Or Phonograph-

1. Insert the phonograph pickup plug into the "Radio-PA-Phono" jack.

2. For radio or TV recording, connect patch cord No. C20.233 to the voice coil of the radio or TV receiver speaker by means of the alligator clips. Plug into "Radio-PA-Phono" jack.

3. Proceed as described under "To Record From Microphone".

NOTE: Remove patch cord after recording is completed.

To Use Second Track-

1. Depress the "Stop" button when all the tape has wound onto the take-up reel.

2. Remove reel containing tape and place on left hand supply pan.

3. Place empty reel on right hand take-up pan.

4. Thread tape as previously described.

To Play Recordings-

1. Turn On unit with "Volume" control knob.

2. Thread tape as described under "Threading The Tape".

3. Set the speed change knob (1) to the speed at which the recording was made.

4. Depress "Play" button until it latches.

5. Adjust "Volume" and "Tone" control to desired listening level.

High-Speed Forward Or Reverse-

When it is desirable to play a certain portion of the tape over again it is not necessary to rewind the entire tape. By depressing the "Forward" or "Reverse" button the tape will advance (or reverse) at a rapid speed.

Several minutes of normal recording can be skipped in a few seconds by the "Reverse" and "Forward" buttons.

Tape Timer-

If, when making recordings or playing a recorded tape, you wish to play back a certain recording, note the reading on the timer scale when the particular recording is being made or heard. Rewind the tape until the number you have noted appears on the scale, press "Stop" button, then press "Play" button and you are now listening to the recording you wanted.

When starting a new reel of tape or re-recording a reel, reset the indicator pointer to "O" by rotating the reset knob. By starting at "O" on all tapes, the number location can be cataloged for each selection on any reel.

To Edit And Splice Tape-

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excessive width.

Erasing Recorded Material-

When the record button is depressed, the erase head is automatically positioned, erasing any previous recording before a new one is made. You may erase material no longer needed, without recording, by depressing the "Record" button and turning the "Volume" control knob to the minimum volume position of extreme counter-clockwise position just before the recorder shuts off. One track is erased at a time. To erase the second track, reverse the reels and repeat the above operation.

Remote Control Operation-

A socket and switch are provided to allow remote operation up to a distance of 18 feet, either recording or playback. This is accomplished by means of a remote control cable (Model No. HC-12). Connect attachment cord as follows:

1. Insert remote control cable plug into remote socket. Be sure remote control switch on end of cable is in "Stand-by" position.

2. With control switch on the recorder in "Normal" position start the unit in the regular manner and set "Volume" control to the proper level.

3. Place control switch on the set to "Remote" position. Tape will come to a stop.

The recorder can now be operated (start and stop) by means of the remote cable switch. When starting the recorder by means of the remote control, the switch should be rotated to the "Motor" position and then after a slight pause rotated to the "Record-Play" position. To stop recording or playback, rotate the control switch directly to "Stand-by" position, pausing slightly at the "Motor" position.

ADJUSTMENTS

Record-Play Head Adjustment-
(See Exploded View)-

To adjust the record-play head (43) for maximum frequency response, make the following adjustment.

1. Remove the rear escutcheon (15) and rear escutcheon plate (20).

2. Properly thread an alignment tape or a good recorded tape on the machine.

3. Set the control as described under "To Play Recordings".

4. Turn adjustment screw (44) as required until the maximum high-frequency output is obtained.

Pressure Pad Adjustment-
(See Exploded View)-

1. Remove the front escutcheon (14).

2. Depress the "Play" button. Do not turn the recorder on.

3. Use a pencil type postal scale and check the amount of pressure necessary to just pull the pad away from the tape. The test should be made on the end of the pressure pad mounting spring (49). Adjust the pressure pad for 1 3/4 oz. $\pm$ 1/4 oz. pressure.

(a) The record head pressure pad is adjusted by the locked adjustment screw (40).

(b) The guide post pressure pad (35) is adjusted by the locked adjustment screw (40).

(c) The guide post pressure pad (35) is adjusted by bending the pressure pad spring. It must be adjusted for minimum pressure against the tape.

4. After the adjustments are made depress the "Stop" button and replace the front escutcheon.

Erase Head Adjustment-

1. With tape properly threaded, turn recorder on and depress the "Record" button. Allow tape to run for a few seconds then turn recorder off, but leave "Record" button depressed.

2. With the escutcheons removed check the erase head (38) to see if it is parallel with the tape.

3. Check to see if the top edge of the tape coincides with the top end of the diagonal slot in the erase head (junction of long diagonal slot and short vertical slot). To adjust level of tape, loosen set screw (29), see exploded view, and rotate tape guide post (30) to move tape up or down. Tighten set screw (29).

4. After this adjustment has been made, check to see if the tape moves forward approximately 1/64" when the "Record" button is depressed. If not, loosen the forward adjustment screw(38A), see Figure 1, and turn the screw in or out as required to obtain this 1/64" movement. Tighten the lock nut.

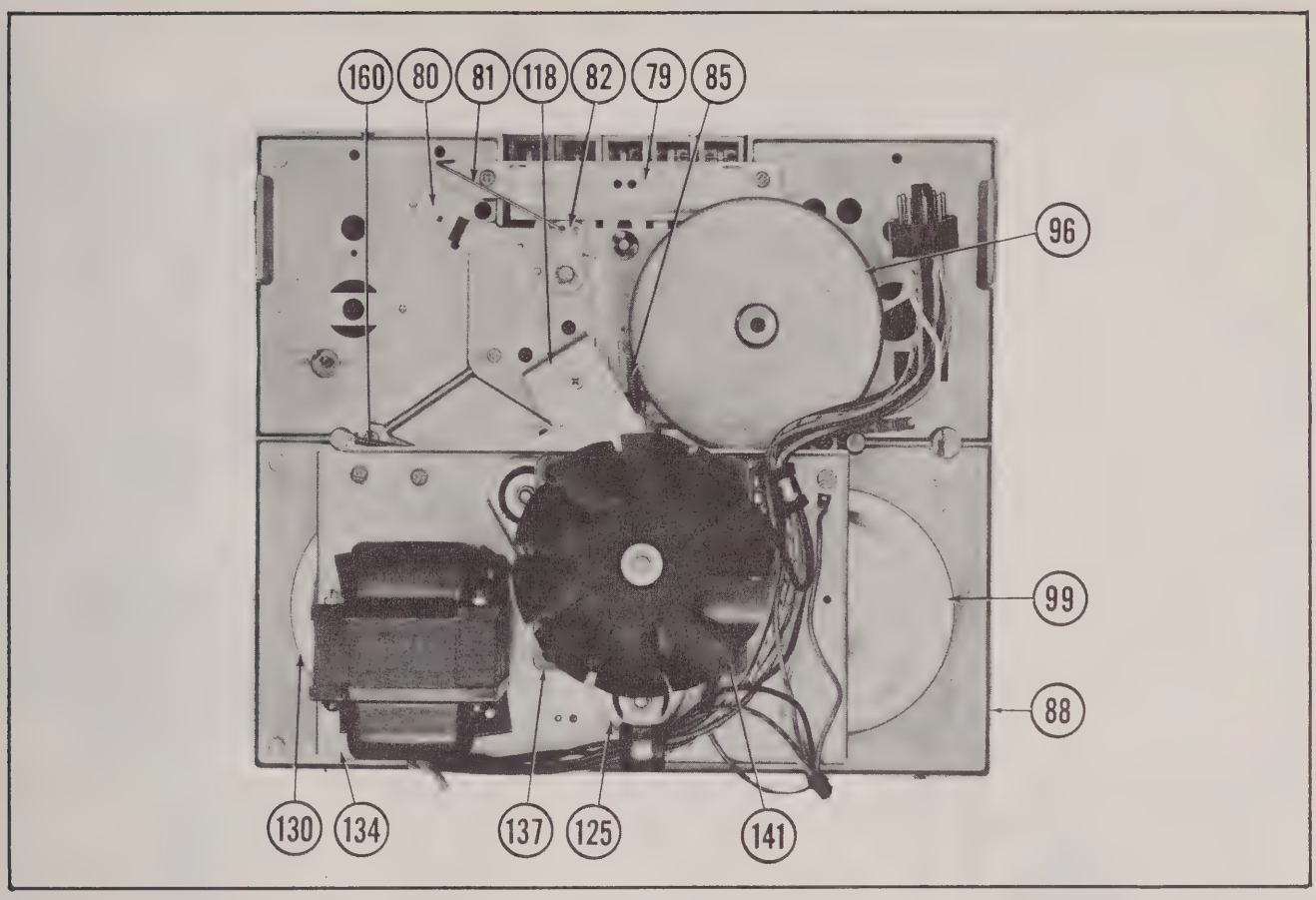


FIGURE 3

Brake Shoe Adjustment-

1. With all push buttons in the up position the brake shoes (92) should clear the drums by approximately 1/8".

2. Depress the "Stop" button while observing the brake shoes. Both brake shoes must contact the drums at the same time and with equal pressure.

3. The adjustment is accomplished by bending the spring arm (94).

Bias Adjustment - Models 651 and 674 -

Turn the recorder on and depress the "Recorder" button; use no tape. To determine if the bias is within satisfactory limits without dismantling the unit, merely connect a VTVM from the top lug of the recording head to chassis. If 75 to 100 volts are present no adjustment is necessary.

If the readings are outside of this range, proceed as follows:

(Model 651)
1. Try a new 12AX7, 6AT6, 6AQ5 and 6X4.
2. If still not within range, remove the chassis shield and connect a low capacity VTVM from test point A to chassis and adjust trimmer M7 to obtain a reading of 2.25 volts.

(Model 674)
1. Try a new 12AY7, 12AX7, 6AQ5, and 5Y3.
2. If still not within range, remove the chassis shield and connect a low capacity VTVM from test point A to chassis. Use low scale. Adjust trimmer M7B for maximum reading. Adjust trimmer M7A to obtain a reading of 2.25 volts. This provides optimum in performance.

Neon Record Level Indicators Models 651 and 674 -

The neon record indicator firing level adjustment is only required if a neon bulb is replaced. The two neon indicators are adjusted for correct firing level by means of two trimmer capacitors, one for each indicator.

To adjust indicators proceed as follows:

1. Turn recorder on and depress "Record" button.
2. Connect a short jumper lead across the bias oscillator coil L1 (short out the coil to disable the oscillator).
3. Connect an audio oscillator, set at 1000 cycles, into the microphone input jack. Output of audio oscillator should be approximately .01 volt. (A volt 1 output level may be used with 100 to 1 reduction pad of resistors inserted between the audio oscillator and the microphone jack.)

(Model 651) Connect probe of low capacity type AC VTVM to test point B (junction of two 330KΩ resistors, R22 and R23, mounted on the terminal strip near the volume control).

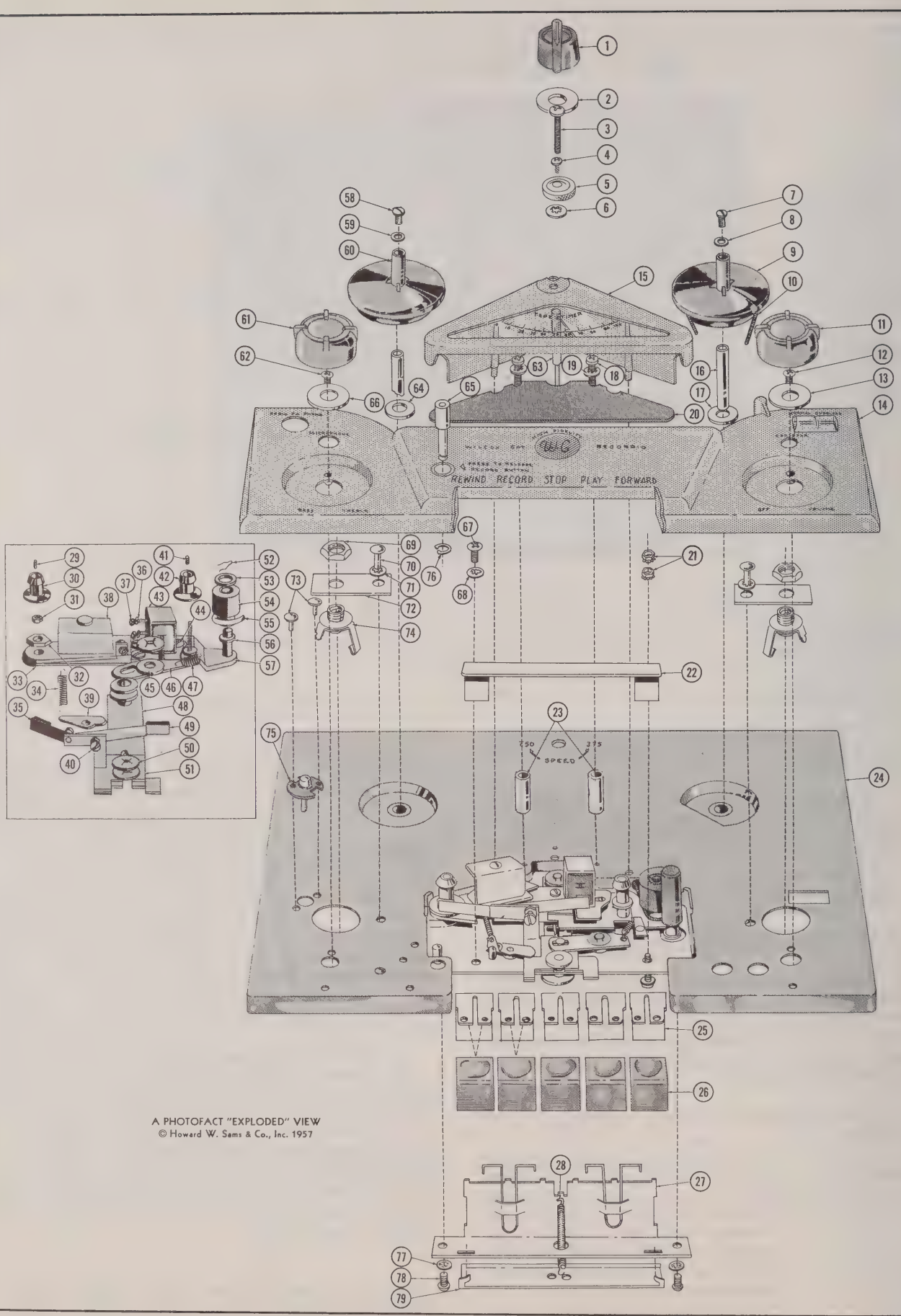


FIGURE 4A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

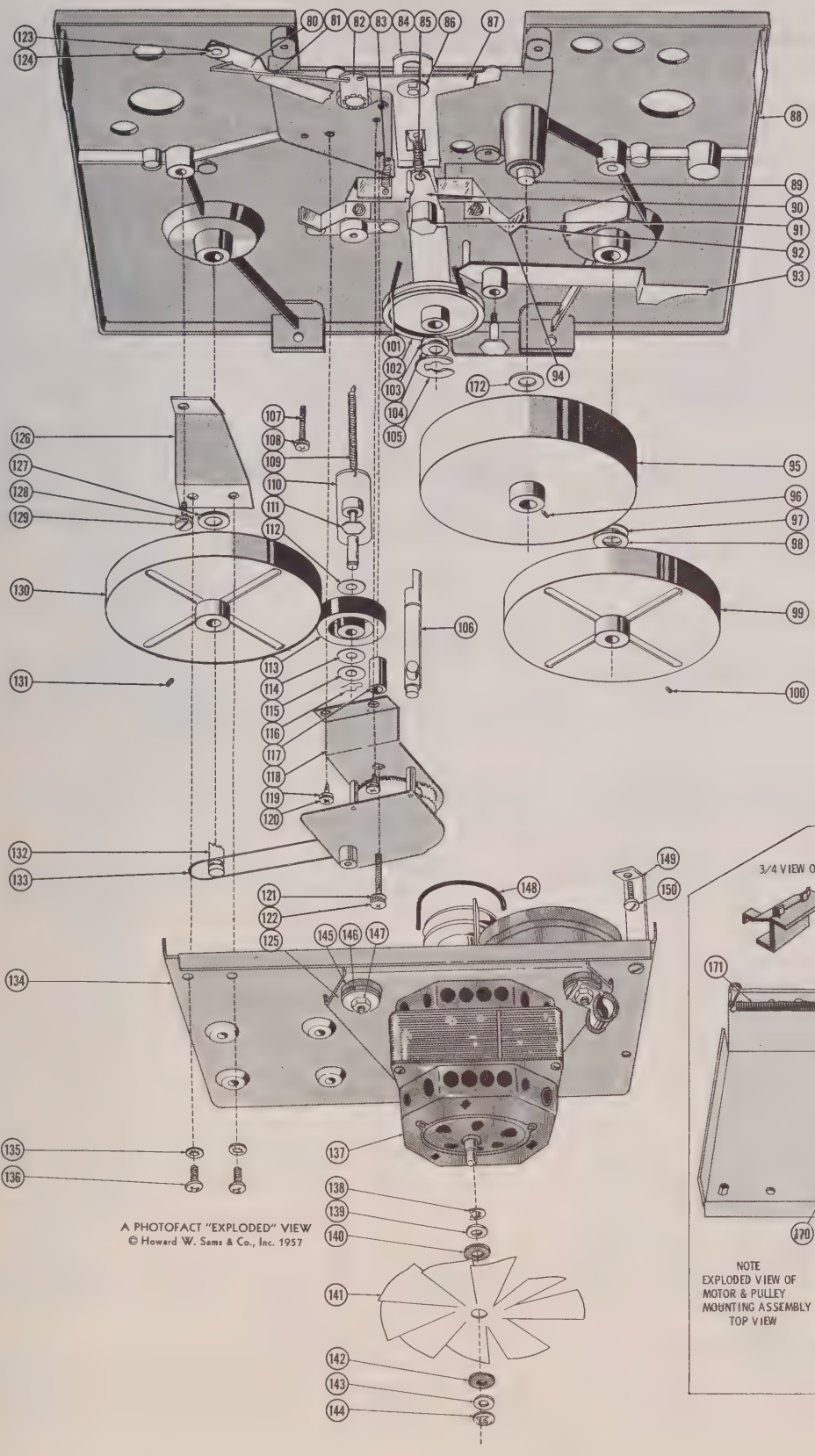


FIGURE 4B. EXPLODED VIEW OF PARTS BELOW BASEPLATE

(Model 674) Connect probe of low capacity type AC VTVM to test point B (junction of two 330KΩ resistors, R31 and R32, mounted on the terminal strip near the volume control).

4. Adjust volume control to obtain a reading of 36 volts on VTVM and leave control set and VTVM connected.

5. Disconnect shorting jumper from across bias oscillator coil.

6. Adjust "Normal" indicator trimmer (see Figure 1) fully clockwise and then turn slowly counter clockwise so that upon loosening the trimmer the "Normal" bulb barely lights. This adjustment must be made loosening the trimmer.

7. Short out the bias oscillator coil.

8. Increase volume control to obtain a reading of 88 volts on the VTVM.

9. Remove short from bias oscillator coil.

10. Adjust "Overload" indicator trimmer as decribed in step "6" for just barely lighting the "Overload" indicator bulb.

IMPORTANT: Do not readjust the recording bias oscillator after setting the indicator light adjustments.

TROUBLES

Push Buttons Fails To Latch Into Position-

1. Lock plate spring (28) loose or broken, resulting in the lock plate not being held against the hinge bracket (79).

Fails To Erase-

1. Spring (34) loose or broken, resulting in the erase head (38) not being pulled forward to engage the tape.

2. Erase head not aligned properly. See "Erase Head Adjustment".

No Fast Forward Or Reverse-

1. Idler lever tension spring (85) may be loose or broken; if so, idler lever (90) will not be actuated.

2. Check idler drive belt (148) to see if it is properly connected.

No Drive On Record Or Playback-

1. Idler tension spring (160 and 171) loose or broken, thereby not holding idler wheel (153) in engagement with motor pulley (164) and flywheel (95).

2. Idler slide plate (158) binding on slide bushing (157), thus preventing idler wheel (153) from moving forward.

Tape Fails To Wind On Take-Up Reel During Record Or Playback-

1. Reel drive spring (55) loose or broken. Replace if broken.

2. Brake drum shaft (16) binding. Clean foreign matter from bearing surface.

Speed Variation Or "Wow".

1. Check the capstan (89), pinch roller (54), idler wheel (153), motor pulley (164), and flywheel (95) for oil or foreign material on their driving surfaces. Clean these parts with a good cleaning fluid.

2. Check motor pulley (164) to see if it is secured to motor shaft.

3. Check idler tension spring (160 and 171); see if they are holding idler wheel (153) in firm contact with motor pulley (164) and flywheel (95).

4. Idler slide plate (158) binding on slide bushing (157), preventing idler wheel (153) from making positive contact with the motor pulley and flywheel.

Tape Overruns Or Spills When Stop Button Is Depressed During Fast Forward Or Rewind-

1. Brake shoes out of adjustment. See "Brake Shoe Adjustment".

2. Brake pads worn out. Replace pads.

Fails To Record-

1. Tape pressure pad not adjusted properly, resulting in the tape not being held against the recording head. See "Pressure Pad Adjustment".

2. Record head (43) loose on its mounting. Adjust head and tighten into position as described under "Record - Play Head Adjustment".

3. Check the recording tape to see if the dull-coated side faces inward on the reel. If the dull side faces outward a recording cannot be made.

CLEANING

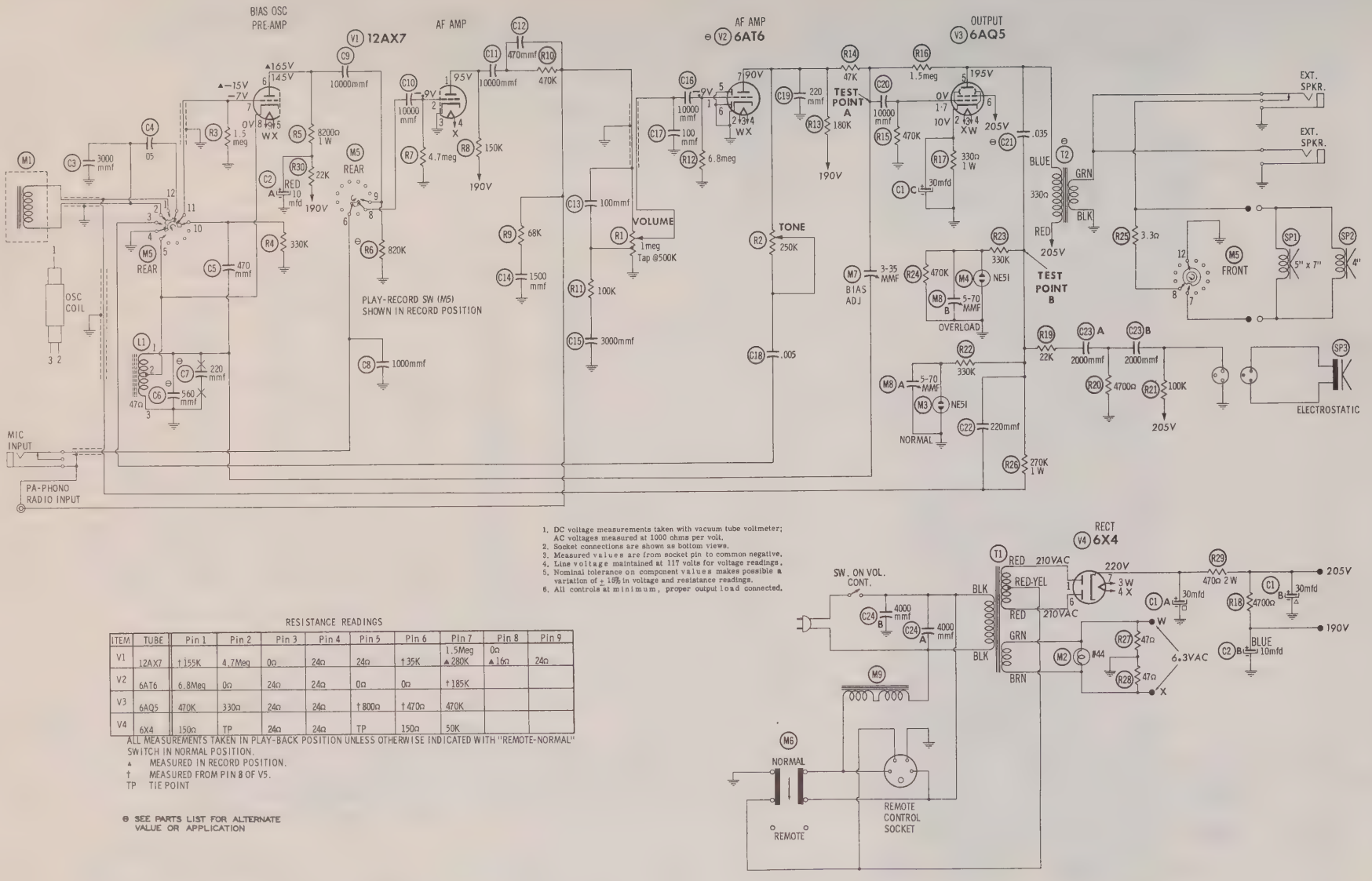
The record head (43), capstan (89), and pressure roller (54) are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts. Use a soft cloth and alcohol to clean the head surfaces, capstan and pressure roller.

CAUTION: Do not use a brush or any metal object when cleaning the recording head as this could mar the metal pole piece.

LUBRICATION

All rotating parts are provided with generous size oilite bearings, which are factory lubricated and require no further attention.

An occasional cleaning out of foreign matter under the plastic pushbutton cover is desirable, and a small drop of oil on the sliding lever members is advisable.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†155K	4.7Meg	0Ω	24Ω	24Ω	†35K	1.5Meg ▲280K	0Ω ▲16Ω	24Ω
V2	6AT6	6.8Meg	0Ω	24Ω	24Ω	0Ω	0Ω	†185K		
V3	6AQ5	470K	330Ω	24Ω	24Ω	†800Ω	†470Ω	470K		
V4	6X4	150Ω	TP	24Ω	24Ω	TP	150Ω	50K		

ALL MEASUREMENTS TAKEN IN PLAY-BACK POSITION UNLESS OTHERWISE INDICATED WITH "REMOTE-NORMAL" SWITCH IN NORMAL POSITION.
▲ MEASURED IN RECORD POSITION.
† MEASURED FROM PIN 8 OF V5.
TP TIE POINT

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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SCHEMATIC DIAGRAM OF MODEL 651

WILCOX-GAY
MODELS 651, 674

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Bias Osc. Playback Preamp. -AF Amp.	12AX7	
V2	AF Amp.	6AT6	Note 1
V3	Output - Bias Osc.	6QA5	
V4	Rectifier	6X4	

Note 1: Some versions use 6AV6 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Wilcox-Gay PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■30	250	B-5.437	AFH3-89	BO670	FP216	TMD-52	T-340	TVL-4560
B	▲30	250				TC77	TD-30-150		
C	30	25							
C2A	10	200	C-5.444	PRS250V1010	BBRD8D25	TCD52	TDLD-25	FMD-4510	TVA-2722

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

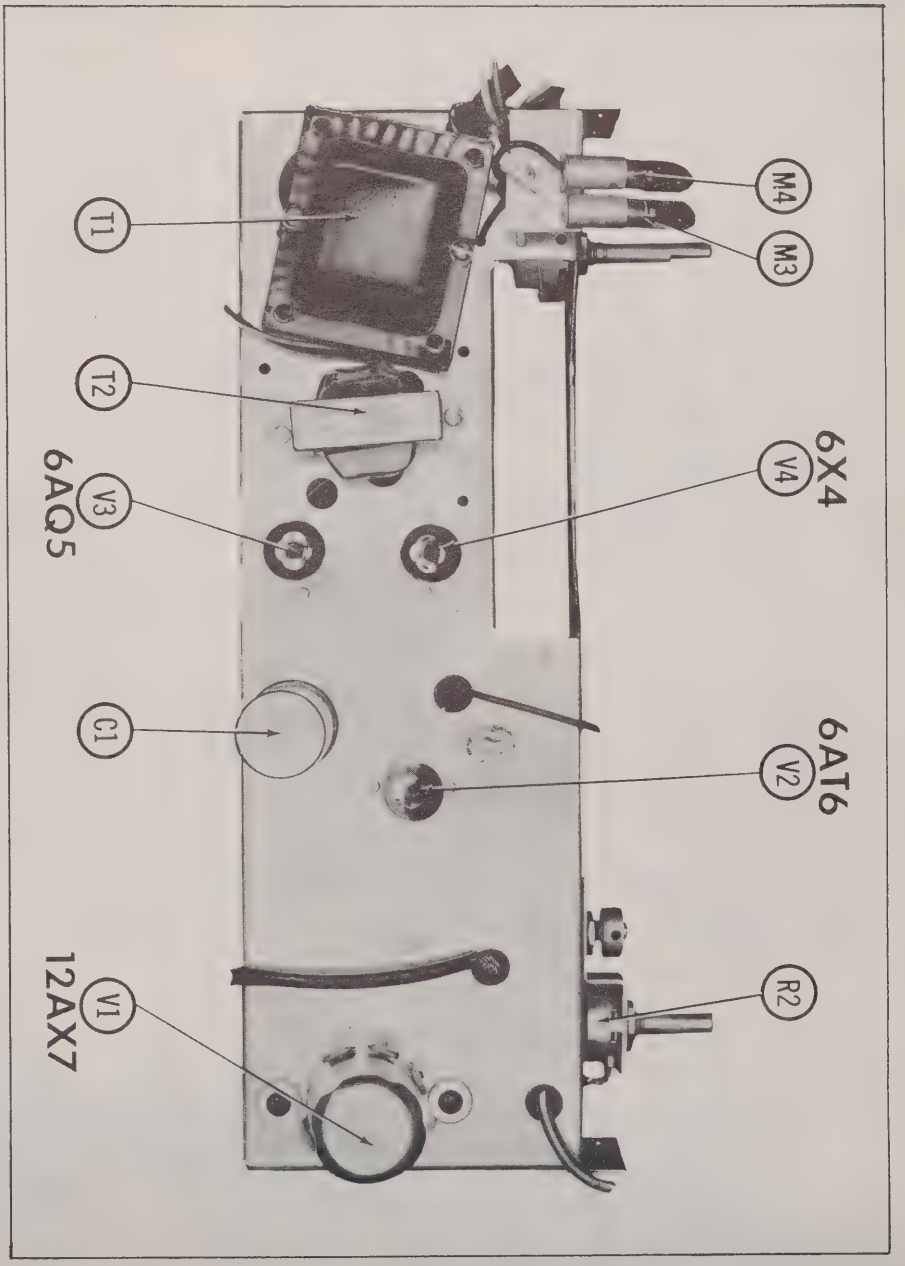
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Wilcox-Gay PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	3000		C-4.109-31	SI3000	DD-302	K080	GP-3000	UC-523	5GA-D3	
C4	.05	200	D-4.148-21	BPD-05		CUB2S5		GEM-415	2TM-S5	
C5	470		C-4.109-3	BPD-00047	DD-471	G060	GP-470	UC-5347	5GA-T47	
C6	560		D-4.104-52	CM20-560	DD-561	1W5T56			MS-356	Note 1
C7	220		C-4.109-27	BPD-0002	DD-221	G051	GP-220	UC-5322	5GA-T22	Note 1
C8	1000		C-4.109-9	BPD-001	DD-102	G069	GP-1000	DC521	5HK-D1	
C9	10000		C-4.109-33	BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C10	10000		C-4.109-33	BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C11	10000		C-4.109-33	BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C12	470		C-4.109-3	BPD-00047	DD-471	G060	GP-470	UC-5347	5GA-T47	
C13	100		C-4.109-10	BPD-0001	DD-101	G042	GP-100	UC-531	5GA-T1	
C14	1500		C-4.109-13	SI3000	DD-152	G071	GP-1500	UC-5215	5HK-D15	
C15	3000		C-4.109-31	SI3000	DD-302	K080	GP-3000	UC-523	5GA-D3	
C16	10000		C-4.109-33	BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C17	100		C-4.109-10	BPD-0001	DD-101	G042	GP-100	UC-531	5GA-T1	
C18	.005	600	D-4.147-48	BPD-005	DD-502	CUB6D5		GEM-625	6TM-D5	
C19	220		C-4.109-27	BPD-0002	DD-221	G051	GP-220	UC-5322	5GA-T22	
C20	10000		C-4.109-33	BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C21	.035	600		BPD-03	DF-303	CUB6S33		GEM-613	6TM-S35	Note 2
C22	220		C-4.109-27	BPD-0002	DD-221	G051	GP-220	UC-5322	5GA-T22	
C23A	2000		B-4.131-3	BPD-2X002	DD3-202	DK072	ED2-002	DCD522	5HK-2D2	
B	2000									
C24A	4000		B-4.131-1	BPD-2X004	D6-402	DK078	ED2-004	DCD524	5HK-2D4	
B	4000				D6-402					

Note 1: When C6 is 820MMF, C7 is not used.
Note 2: Some versions may use .05MFD in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Wilcox-Gay PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	C8-227-2	BT-71-S	A47F5-1Meg	Q19-137X	UT-443	Volume - Tap@ 500K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	KB-1	
R2A	250K	½	C8-231-1	B-51	A47-250K-Z	Q13-130	U44	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Wilcox-Gay PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R3	1.5Meg		D-7.101-148	BTS-1.5Meg	
R4	330K		D-7.101-121	BTS-330K	
R5	8200Ω	1	D-7.102-62	BTA-8200	
R6	820K			BTS-820K	Note 1
R7	4.7Meg		D-7.101-178	BTS-4.7Meg	
R8	150K		D-7.101-107	BTS-150K	
R9	68K		D-7.101-93	BTS-68K	
R10	470K		D-7.101-128	BTS-470K	
R11	100K		D-7.101-100	BTS-100K	
R12	6.8Meg		D-7.101-184	BTS-6.8Meg	
R13	180K		D-7.101-111	BTS-180K	
R14	47K		D-7.101-86	BTS-47K	
R15	470K		D-7.101-128	BTS-470K	
R16	1.5Meg		D-7.101-148	BTS-1.5Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Wilcox-Gay PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R17	330Ω	1	D-7.102-2	BTA-330	
R18	4700Ω		D-7.101-44	BTS-4700	
R19	22K		D-7.101-72	BTS-22K	
R20	4700Ω		D-7.101-44	BTS-4700	
R21	100K		D-7.101-100	BTS-100K	
R22	330K		D-7.101-121	BTS-330K	
R23	330K		D-7.101-121	BTS-330K	
R24	470K		D-7.101-128	BTS-470K	
R25	3.3Ω		C-6.212-1	BW½-3.3	
R26	270K	1	D-7.102-126	BTA-270K	
R27	47Ω		D-7.101-250	BTS-47	
R28	47Ω		D-7.101-250	BTS-47	
R29	470Ω	2	D-7.103-72	BTB-470	
R30	22K		D-7.101-72	BTS-22K	

Note 1: A 680K resistor (Part #D-7.101-134) used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Wilcox-Gay PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Bias Osc.	B-1.557				Tapped ⓐ 33Ω

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Wilcox-Gay PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ⓐ .36A	440VCT ⓐ .041A	6.3V ⓐ 2.1A		C-9.281					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Wilcox-Gay PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5.3K	3-4Ω	B-9.282-3① ② D-9.280 ③	Z1000④ ⑤	A-2930	A-3877	S-6X ⑥	24S51	① Not used in some versions. ② Alternate part #C-9.264. ③ May be used in some versions. ④ Tape center tap on primary winding. ⑤ Use secondary taps 1 & 5. ⑥ Drill one new mtg. hole.

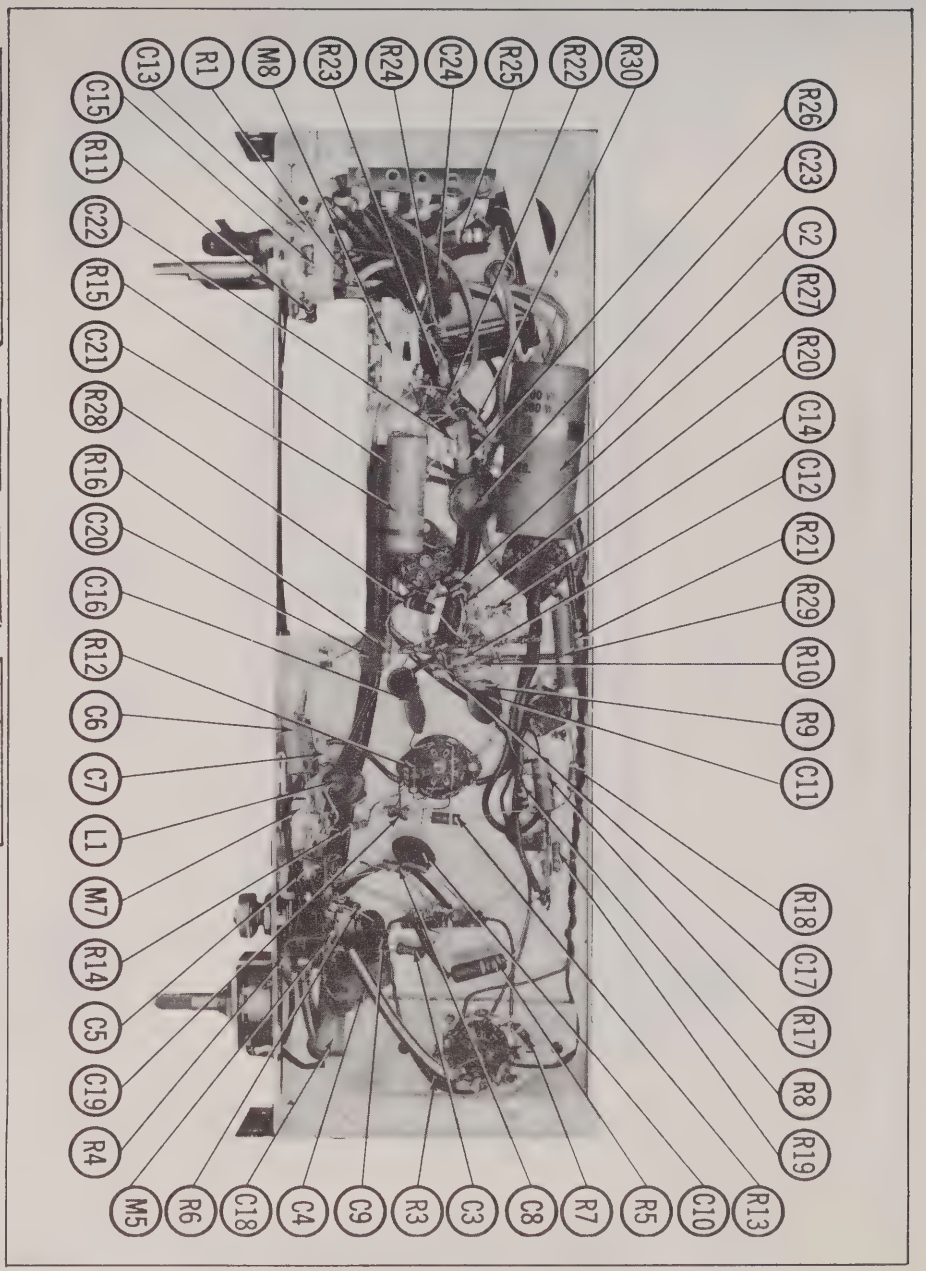
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Wilcox-Gay PART No.	QUAM PART No.	NOTES
SP1	4"	PM	6-8Ω	C-30.345-2 ①	4A1Z6 ①	① Connect in parallel & phase. ② Electrostatic Speaker.
SP2	5" X 7"	PM	6-8Ω	C-30.341-2 ① ②	5?A1Z6 ①	
SP3						

MISCELLANEOUS

ITEM No.	PART NAME	Wilcox-Gay PART No.	NOTES
M1	Head		Record-Erase
M2	Lamp		#44
M3	Lamp	45-2036-1	NE51 (Normal)
M4	Lamp	45-2036-1	NE51 (Overload)
M5	Switch	B-11.230	Record-Play (Wafer Type)
M6	Switch		Remote-Normal (DPDT Slide Type)
M7	Trimmer Cap.	B-4.144	Bias Adjust (3-35MMF)
M8A	Trimmer Cap.		Normal Adj. (5-70MMF)
B	Trimmer Cap.		Overload Adj. (5-70MMF)
M9	Motor		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Bias Osc. -Playback Preamp-		
	AF Amp.	12AY7	
V2	AF Amp. -Phase Inverter	12AX7	

ITEM No.	USE	TYPE	NOTES
V3	AF Output	6AQ5	
V4	AF Output	6AQ5	
V5	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Wilcox-Gay PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲20	450	C-5.421.7	AFH4-67	DO520	FP444	TMQ-83	Q-340	TVL-4724.2
B	■20	450							
C	▲20	450							
D	20	25							
C2A	■30	250	B-5.437	AFH3-89	CO670		TMD-25	T-340	TVL-2517
B	▲30	250							
C	30	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

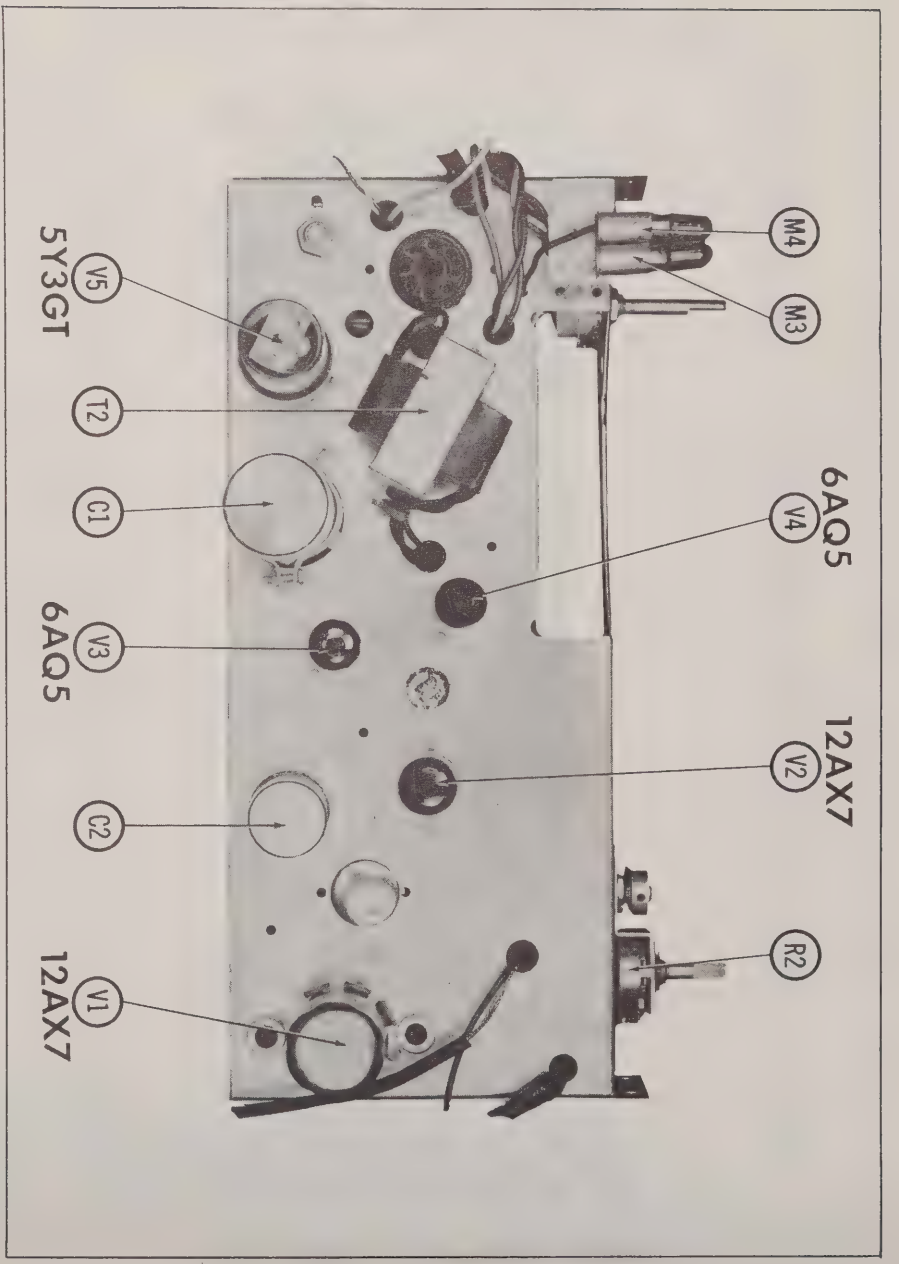
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Wilcox-Gay PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	1500		C-4.109-13	BPD-0015	DD-152	G071	GP-1500	UC-5215	5HK-D15	
C4	.05	200	D-4.148-21		DF-503	CUB2S5		GEM-415	2TM-S5	
C5	1000		D-4.104-88	BPD-001	DD-102	G069	GP-1000	UC-521	5HK-D1	
C6	470		C-4.109-2	BPD-00047	DD-471	G060	GP-470	UC-5347	5GA-T47	
C7	10000		C-4.109-33	BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C8	.033	600		BPD-03	DF-303	CUB6S33		GEM-6133	6TM-S33	
C9	10000		C-4.109-33	BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C10	5000		C-4.115-1	BPD-005	DD-502	K080	GP-5000	DC525	5HK-D5	
C11	470		C-4.109-2	BPD-00047	DD-471	G060	GP-470	UC-5347	5GA-T47	
C12	100		C-4.109-10	BPD-0001	DD-101	G042	GP-100	UC-531	5GA-T1	
C13	1000		C-4.109-9	BPD-001	DD-102	G069	GP-1000	UC-521	5HK-D1	
C14	100		C-4.109-10	BPD-0001	DD-101	G042	GP-100	UC-531	5GA-T1	
C15	.05	200	D-4.148-21	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C16	10000		D-4.148-50	BPD-01	DD-103	K082	GP-10000	DC511	5HK-S1	
C17	100		C-4.109-10	BPD-0001	DD-101	G042	GP-100	UC-531	5GA-T1	
C18	1500		C-4.109-13	BPD-0015	DD-152	G071	GP-1500	UC-5215	5HK-D15	
C19	220		C-4.109-27	BPD-0002	DD-221	G051	GP-220	UC-5322	5GA-T22	
C20	.047	600	D-4.148-91	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C21	.047	600	D-4.148-91	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C22	220		C-4.109-27	BPD-0002	DD-221	G051	GP-220	UC-5322	5GA-T22	
C23	.047	600	D-4.148-91	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C24	.015	600	D-4.147-87	BPD-015	D6-103	CUB6S15		GEM-6115	6TM-S15	
C25	1500	1500	B-4.129-7	HVD-15-1500	DD30-152	V2D15	HD15-1500	DC30215		
C26	1000		C-4.109-9	BPD-001	DD-102	G069	GP-1000	UC-521	5HK-D1	
C27A	2000		B-4.131-3	BPD-2X002	DD3-202	DK072	ED2-002	DCD522	5HK-2D2	
B	2000									
C28	20		C-4.109-34	DI-20	D6-200	G023	GP-20	ZT-542	5GA-Q2	
C29	20									Note 1
C30	1500		C-4.109-13	BPD-0015	DD-152	G071	GP-1500	UC-5215	5HK-D15	
C31A	4000		B-4.131-1	BPD-2X004	D6-402	DK078	ED2-004	DCD524	5HK-2D4	
B	4000				D6-402					

Note 1: Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Wilcox-Gay PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	C8-227-2	BT-71-S	A47F5-1Meg	Q19-137X	UT-443	Volume - Tap ② 500K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	
R2A	250K	½	C8-231-1	B-51	A47-250K-Z	Q13-130	U44	Tone
B	Tone			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500Ω	½	C8-207-7	AB-4	A47-500-S	Q11-103	U2	Hum Adjust
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Wilcox-Gay PART No.	IRC PART No.	
R4	1.5Meg		D-7.101-148	BTS-1.5Meg	
R5	330K		D-7.101-121	BTS-330K	
R6	22K	1	D-7.102-80	BTA-22K	
R7	120K	1	D-7.102-112	BTA-120K	
R8	680K 5%		D-7.101-134	BTS-680K 5%	
R9	4.7Meg		D-7.101-178	BTS-4.7Meg	
R10	220K		D-7.101-114	BTS-220K	
R11	10K		D-7.101-58	BTS-10K	
R12	470K		D-7.101-128	BTS-470K	
R13	68K		D-7.101-93	BTS-68K	
R14	4.7Meg		D-7.101-178	BTS-4.7Meg	
R15	220K		D-7.101-114	BTS-220K	
R16	39K	2	D-7.103-153	BTB-39K	
R17	2.2Meg		D-7.101-155	BTS-2.2Meg	
R18	47K		D-7.101-86	BTS-47K	
R19	120K	1	D-7.102-112	BTA-120K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Wilcox-Gay PART No.	IRC PART No.	
R20	15K	1	D-7.102-72	BTA-15K	
R21	4700Ω		D-7.101-44	BTS-4700	
R22	120K	1	D-7.102-112	BTA-120K	
R23	220K		D-7.101-114	BTS-220K	
R24	220K		D-7.101-114	BTS-220K	
R25	270Ω	2	D-7.103-62	BTB-270	
R26	15K	1	D-7.102-72	BTA-15K	
R27	1.6Ω	7	C-6.215-11	PW7-2	
R28	4700Ω		D-7.101-44	BTS-4700	
R29	100K		D-7.101-100	BTS-100K	
R30	100K		D-7.101-100	BTS-100K	
R31	330K		D-7.101-121	BTS-330K	
R32	330K		D-7.101-121	BTS-330K	
R33	470K		D-7.101-128	BTS-470K	
R34	1000Ω	1	D-7.102-23	BTA-1000	
R35	220Ω	2	D-7.103-58	BTB-220	
R36	33Ω	1	D-7.102-227	BTA-33	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Wilcox-Gay PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Bias Osc.	B-L.557				Tapped ② 33Ω
L2	RF Choke	B-L.556				

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Wilcox-Gay PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ② 1.1A	600VCT ② .075A	5V ② 2A	6.3V ② 1.8A	D-9.278-0	P9304 ①			22R04 ① ②	

① Tape center tap on 6.3V winding.
② Use Universal mtg. brackets.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	Wilcox-Gay PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7.9K CT	8Ω Tap ② 3-4Ω SEC. 2 600Ω	C-9.277-B ①						① Alternate part #B-9.277

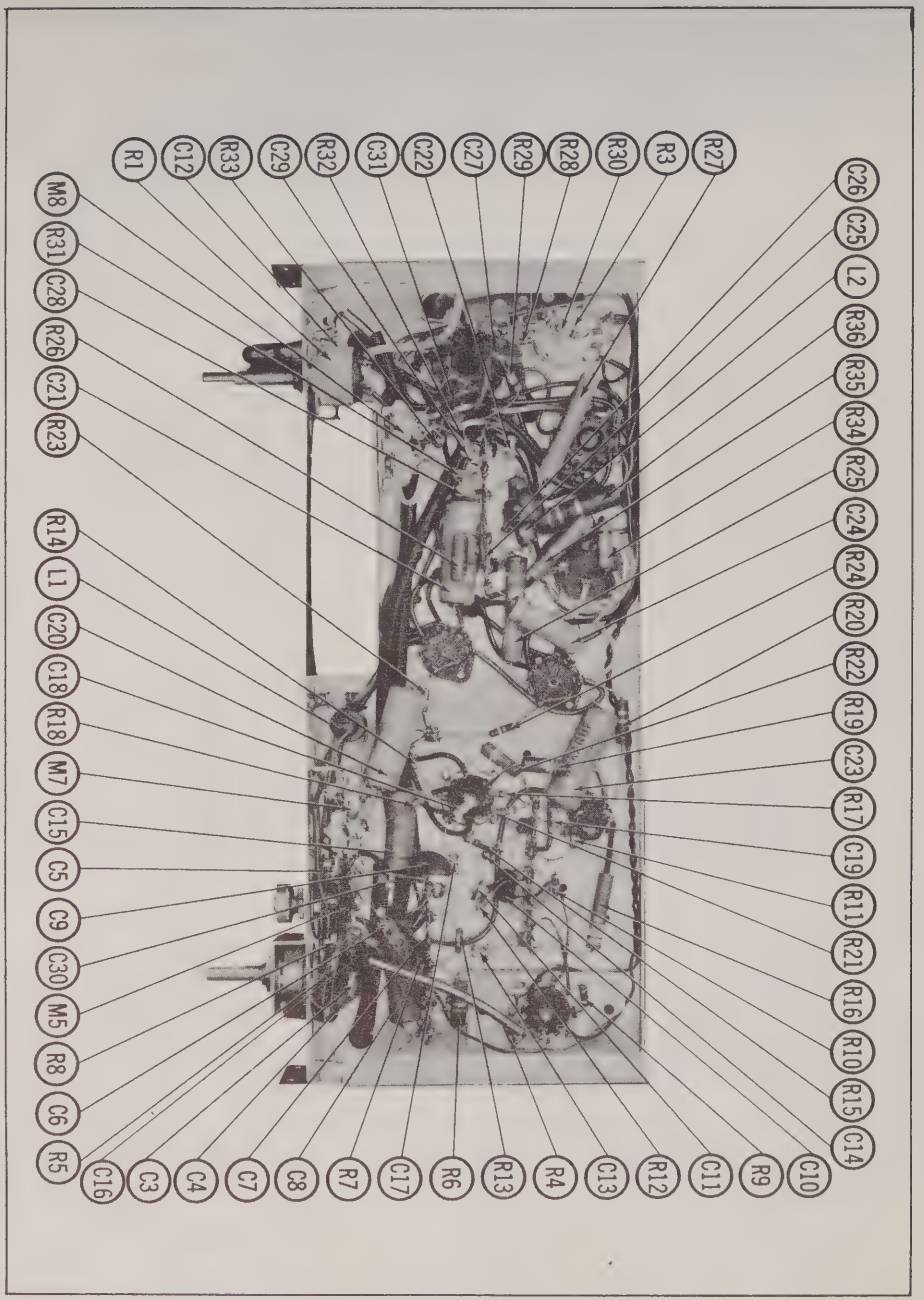
SPEAKER

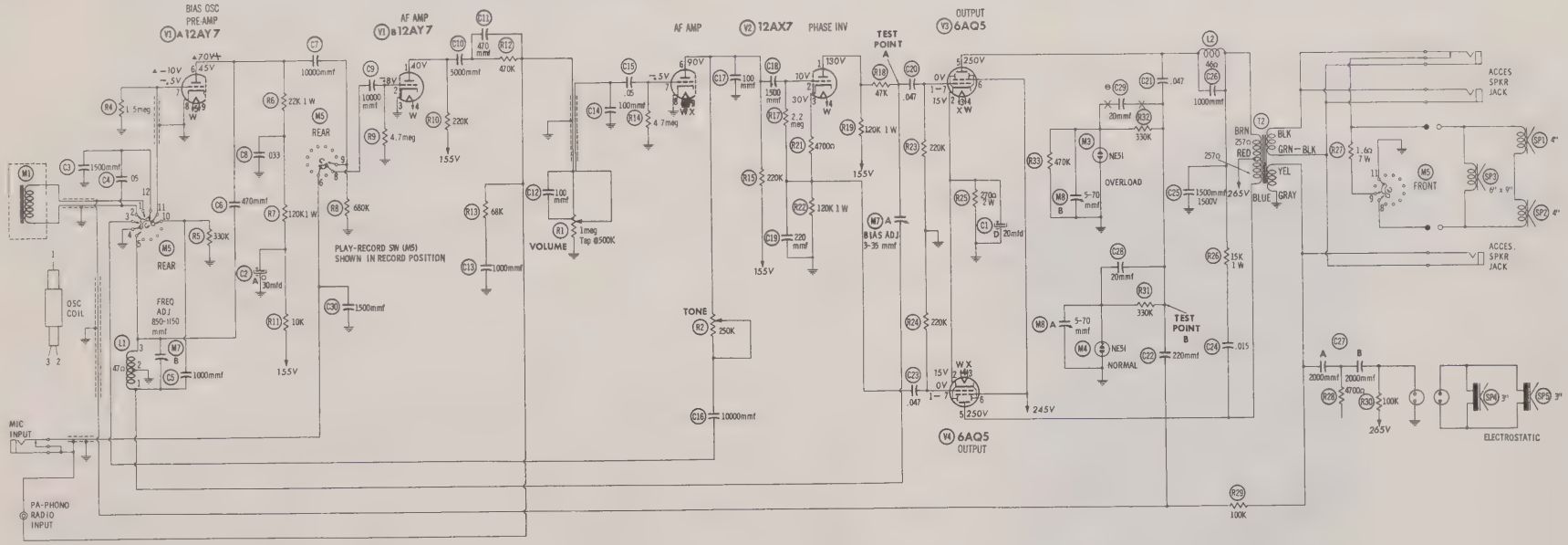
ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Wilcox-Gay PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	C-30.345-2 ①	4A1Z6 ①	① Connect in series-parallel combination & phase.
SP2	4"	PM	6-8Ω	C-30.345-2 ①	4A1Z6 ①	② Electrostatic Speaker.
SP3	6" X 9"	PM	3-4Ω	①	69A2 ①	
SP4	3"			②		
SP5	3"			②		

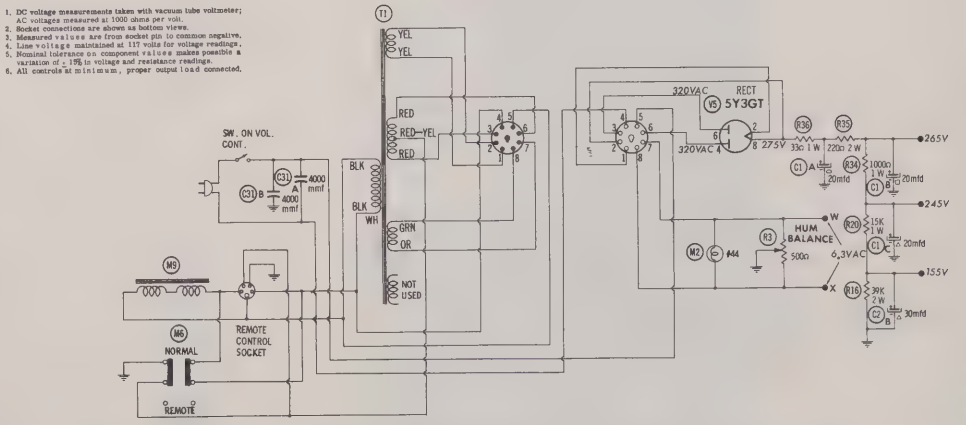
MISCELLANEOUS

ITEM No.	PART NAME	Wilcox-Gay PART No.	NOTES
M1	Head	TR16A	Record-Erase
M2	Lamp		#44
M3	Lamp	45-2036-1	NE51
M4	Lamp	45-2036-1	NE51
M5	Switch	B-11.230	Record, Play-Wafer Type
M6	Switch		Remote, Normal (DPDT - Slide Type)
M7	Trimmer Cap.	C-4.142	2 Gang (Bias Adj. 3-35MMF, Freq. Adj. 850-1150MMF)
M8	Trimmer Cap.		2 Gang (Record Level Adj. -Normal 5-70MMF, Overload 5-70MMF)
M9	Motor	D-35.154F	

CHASSIS—BOTTOM VIEW







1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AY7	†235K	4.7Meg	0Ω	110Ω	110Ω	†165K	1.5Meg ▲ 270K	0Ω	110Ω
V2	12AX7	†135K	2.3Meg	124K	110Ω	110Ω	†235K	4.7Meg	0Ω	110Ω
V3	6AQ5	220K	270Ω	110Ω	110Ω	†510Ω	†1400Ω	220K		
V4	6AQ5	220K	270Ω	110Ω	110Ω	†510Ω	†1400Ω	220K		
V5	5Y3GT	TP	30K	TP	110Ω	TP	110Ω	30K		

ALL MEASUREMENTS TAKEN IN PLAY-BACK POSITION UNLESS OTHERWISE INDICATED WITH "REMOTE-NORMAL" SWITCH IN NORMAL POSITION.
▲ MEASURED IN RECORD POSITION.
† MEASURED FROM PIN 7 OF V4.
TP TIE POINT

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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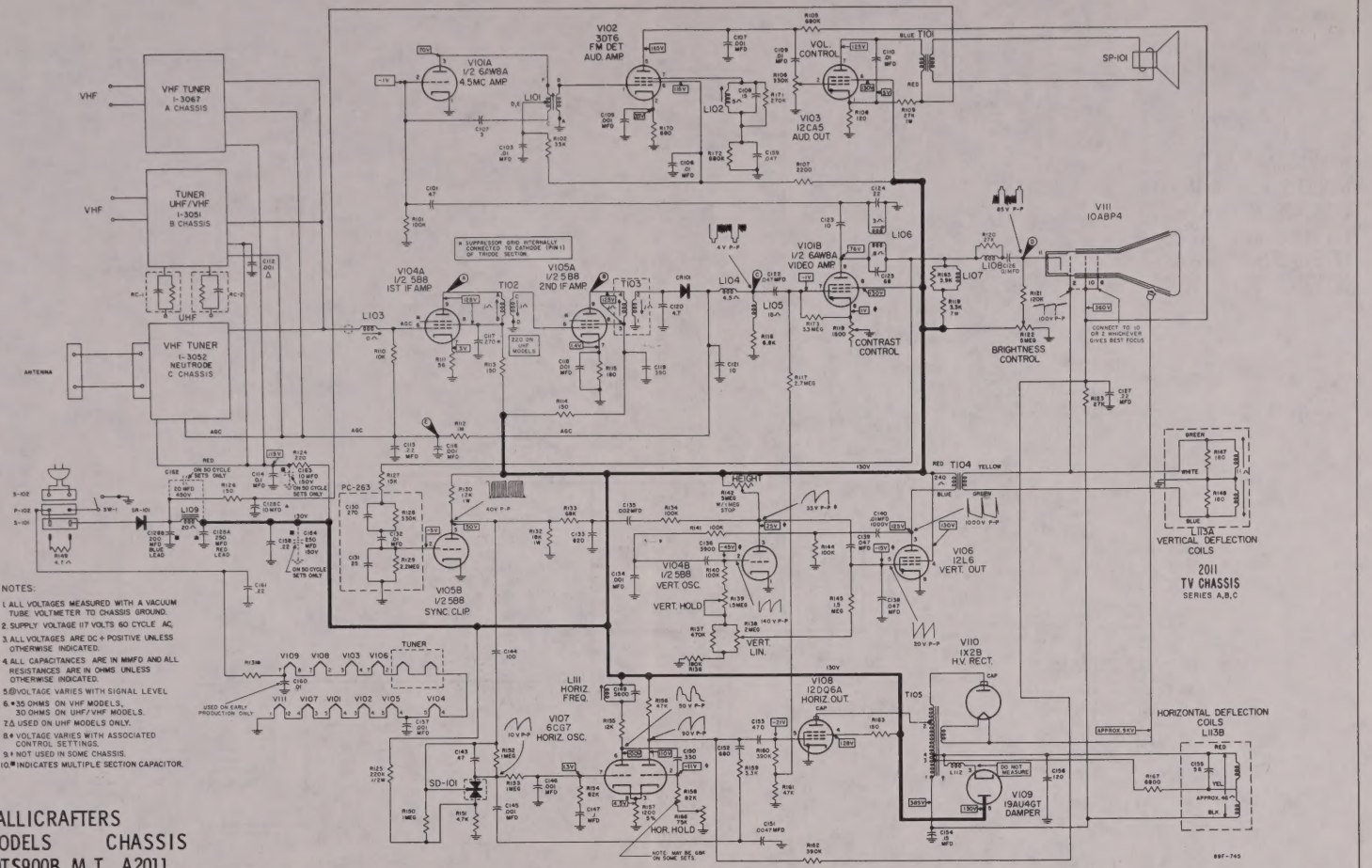
SCHEMATIC DIAGRAM OF MODEL 674

MECHANICAL PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	C-13.282-4	Speed Shift Knob (Gray) Model 674
	C-13.253-5	Speed Shift Knob (Blue) Model 651
2	73-2254-3	Felt Washer
3	57-6C-620-1	#6-32 x 1 1/4 R.H.M.S. Phillips
4	57-3678-1	#4-40x5/16 Phillips O,H.M.S.
5	B-32.302	Timer Knob
6	73-2231-3	#4 Internal Lockwasher Stl. CP
7	57-2049-4	Screw, 6-32 x 1/4 B.H.M.S.
8	72-2334-1	#6 Cantlink Washer
9		Reel Pan for Take-Up Reel (Gray) Model 674
		Reel Pan for Take-Up Reel (Blue) Model 651
10	B-31.351	Reel Drive Spring Belt
11		Volume Control Knob (Gray) Model 674
		Volume Control Knob (Blue) Model 651
12	57-46C-806	#8-32x3/8 R.H.M.S. Phillips
13	73-2254-3	Felt Washer
14	E-13.293-3	Front Escutcheon
15	D-13.292-2	Rear Escutcheon, Silver
16	B-32.315	Brake Drum Shaft (Take-Up Reel)
17	B-28.163	Washer
18	57.1C-618	#6-32x 1 1/8 Phillips R.H.M.S.
19	73-2334-1	#6 Cantlink Washer
20		Rear Escutcheon Plate (Gray) Model 674
		Rear Escutcheon Plate (Blue) Model 651
21	48-2219-1	Keps 6-32x 5/16 Hex Nut & Ext. Lockwasher
22	B-19.858	Push Button Retainer Bracket
23	B-33.446	Spacer
24	D-35.807-1	Baseplate Assembly (Gray) Model 674
	D-35.807-7	Baseplate Assembly (Blue) Model 651
25	B-19.876D	Push Button Lever
26	35.755-5	Push Button Assembly (Gray) Model 674
	B-35.755-3	Push Button Assembly (Blue)
27	B-19.859-1	Hinge Bracket for Push Button
28	B-31.343	Lock Plate Spring
29	57-3439-0	#6-32x3/16 Bristol Head Set Screw
30	B-32.300	Tape Guide Post (Left)
31		6-32 Hex Nut
32	B-32.260	Tape Guide Post Spacer
33	B-35.794-1	Erase Head Plate Assembly
34	B-31-361	Erase Head Tension Spring
35	B-31.334	Pressure Pad (Felt) 2 used
36	73-2233-1	Int. Lockwasher
37	48-2216-1	#2-56x3/16 Hex Nut
38	C-35.756A	Erase Head
39	B-35.766C	Record Actuating Lever Assy.
40	57-428-1	#6-32x3/8 R.H.M.S.
41	57-3439-0	#6-32x3/6 Bristol Head Set Screw
42	B-32.309	Tape Guide Post (Right)
43	C-36.156B	Tape Recording Head (Shure TR 16A)
44		Head Adjustment Screw
45	73-2241-148F	Flat Washer
46	B-19.881	Playback Actuating Lever
47	B-31.360	Pinch Roller Tension Spring
48	C-35.758-1	Playback Slide Plate Assy.
49	B-35.764-1	Pressure Pad Spring Assy.
50	B-33.412	Push-On-Stud Nut, 3/16" Stud
51	B-19.868	Record Slide Plate
52	B-33.409	Hairpin Clip
53	73-2340	Linen Washer
54	B-33.404	Pinch Roller
55	B-31.351	Reel Drive Spring (Belt)
56	73-2340	Linen Washer
57	B-35.871	Pinch Roller Plate Assy.
58	57-2049-4	Screw, 6-32x1/4 B.H.M.S.
59	72-2334-1	#6 Cantlink Washer
60		Reel Pan For Feed Reel (Gray) Model 674
		Reel Pan For Feed Reel (Blue) Model 651
61		Tone Control Knob (Gray) Model 674
		Tone Control Knob (Blue) Model 651
62		#8-32x3/8"R.H.M.S. Phillips
63	35.851	Timer Shaft & Pointer Assy.
64	B-28.163	Linen Washer
65	B-32.308-1	Record Lock Button
66	73-2254-3	Felt Washer
67	57-1C-603-2	#6-32x3/16 B.H.M.S. Brz. Phillips
68	73-2334-1	#6 Cantlink Washer
69	48-2213-1	Hex Nut 3/8-32x1/2"
70	54-2030-35	Drilled Rivet 1/4x122x7/32
71	73-2231-5	#8 Int. Lockwasher
72	B-19.985-1	Bracket for Input Jack
73	54-2030-35	Drilled Rivet 1/4x122x7/32
74	B-33.453	Midget Jack
75	B-33.370	Phono Jack
76	33.415	"E" Ring Retainer
77	73-2241-154	Washer 5/16 O.D.x .144
78	57-3445-1	#8-32x3/8 R.H.M.S.
79	B-19.870	Locking Plate for Push Button
80	B-35.774-1	Record Interlock Assembly
81	B-31.333	Switch Arm Link
82	110-48-B	Switch Lever Assy.
83	B-31.338	Brake Return Spring
84	C-35.835-1	Brake Slide Plate Assembly
85	B-31.339	Idler Lever Tension Spring
86	B-33.412	Push-On-Stud Nut, 3/16 Stud
87	B-35.759-1	Shift Plate Assembly
88		Bottom View of Item 24
89	B-32.259-1	Capstan Shaft
90	35.834-2	Idler Lever Assy.
91	B-32.275-1	#8-32 HH Shoulder Screw
92	B-31.335	Brake Pad, Felt
93	B-35.872	Lever Assembly
94	97-3062	Brake Spring
95	C-13.257-1	Flywheel
96	57-3589-1	8-32x1/4 Bristol Head Set Screw
97	B-28.163	Linen Washer
98	B-28.163	Linen Washer
99	C-35.823-2	Brake Drum & Bushing Assy.
100	57-3589-1	#8-32x1/4 Bristol Hd. Set
101	B-28.181	Idler Drive Belt
102	B-33.406	Idler Drive Sheave
103	73-2254-6	Felt Washer
104	73-2241-150	Flat Washer, Blued Steel
105	B-33.418	Truarc Retuning "E" Ring
106	C-35.816-1	Speed Control Shaft Assy.
107		Screw

MECHANICAL PARTS LIST (CON'T)

Ref. No.	Part No.	DESCRIPTION
108		Washer
109	B-31.362	Sub-Idler Tension Spring
110	B-35.757	Sub-Idler Plate Assy.
111	B-32.275-1	#8-32 HH Shoulder Screw
112	73-2340	Linen Washer
113	B-33.405	Sub Idler Wheel
114	73-2254-6	Felt Washer
115	73-2241-150	Flat Washer
116	B-33.409	Hairpin Clip
117	B-33.118	Spacer
118	B-33.445	Gear Train For Tape Index
119	73-2231-4	#6 Int. Lockwasher
120	57-1C-603-2	6-32x3/16 B.H.M.S. Brz.
121	73-2231-4	#6 Int. Lockwasher
122	57-1C-614-1	#6-32x7/8 Phillips B.H.M.S.
123	54-2030-35	Drilled Rivet 1/4x .122 x 7/32
124	73-2241-18	Flat Washer
125		Motor Adaptor Plate
126	B-19.862	Drive Mounting Plate Bracket
127	B-28.163	Linen Washer
128	73-2231-5	#8 Int. Lockwasher
129	57-11C-804-1	#8-32x1/4 R.H.M.S.
130	C-35-823-B	Brake Drum & Bushing Assy.
131	57-3589-1	#8-32x1/4 Bristol Hd. Set Screw
132	B-32.316	Brake Drum Shaft (Grooved)
133	B-28.175	Counter Belt Rubber
134	35.921-1	Drive Mounting Plate Assy. (Model 674)
	35.860-1	Drive Mounting Plate Assy. (Model 651)
135	73-2231-5	Internal Lockwasher
136	57-2102-3	#8-32x1/4 R.H.M.S.
137	D-36.153E	Motor, Round Type (Fasco) Motor
	D-36.154G	Square Type (G.I. and Alliance)
138	B-33.418	Truarc Retaining "E" Ring
139	73-2241-143	Flat Washer
140	73-2254-3	Felt Washer
141	C-19.887-1	Fan Blade
142	73-2254-3	Felt Washer
143	73-2241-143	Flat Washer
144	33.415	Push-On Fastener
145	B-28-159	Shock Mount
146	B-33.411	Flat Washer
147	48-409-1	8-32x5/16 Hex. Nut
148	B-28.181	Idler Drive Belt
149	B-19.862	Angle Bracket For Mounting Drive Assy.
150	57-2102-3	#8-32x1/4 R.H.M.S.
151	B-33.409	Hairpin Clip
152	B-28.164	Linen Washer
153	B-33.408	Rubber Bonded Idler Wheel, 2 1/2" Diameter
154	51.3182	Shift Plate For High Speed
155	57-2109-2	6x32x3/16 Phillips B.H.M.S.
156	B-33.407-1	"C" Washer
157	B-32.264	Idler Slide Bushing
158	B-35.768	Idler Slide Plate Assembly
159	B-28.163	Linen Washer
160	B-31.324	Idler Spring (Tension)
161	57-2109-2	#6x32x3/16 Phillips B.H.M.S.
162	B-190961	Speed Control Shaft Detent Spring
163	B-31.327	Idler Lifter Compression Spring
164	B-32.288	Motor Pulley
165	57-2102-3	#8-32x1/4 R.H.M.S.
166	73-2231-5	#8 Internal Lockwasher
167	73-2241-143	Flat Washer
168	110-47	Idler Throw-Out Lever
169	B-32.291	Shoulder Washer
170	57-3589-1	#8-32x1/4 Bristol Hd. Set Screw
171	B-31.324	Idler Spring Tension


VHF TUNER I-3067 A CHASSIS
TUNER UHF/VHF I-3051 B CHASSIS
VHF TUNER I-3052 NEUTRODE C CHASSIS
VHF
UHF
ANTENNA
V101A 1/2 6AW8A 4.5MC AMP
V102 30T6 FM DET AUD. AMP
V103 12CA5 AUD OUT
VOL. CONTROL
SP-101
V104A 1/2 588 IST IF AMP
V105A 1/2 588 2ND IF AMP
V101B 1/2 6AW8A VIDEO AMP
CONTRAST CONTROL
BRIGHTNESS CONTROL
V111 10ABP4
V104B 1/2 588 VERT. OSC.
V105B 1/2 588 SYNC. CLIP
V106 12L6 VERT. OUT
VERT. HOLD
VERT. LIN.
V110 1X2B H.V. RECT.
V108 12DQ6A HORIZ. OUT.
V107 6CG7 HORIZ. OSC.
HORIZ. FREQ.
HOR. HOLD
V109 19AU4GT DAMPER
L111 HORIZ. FREQ.
L113A VERTICAL DEFLECTION COILS
L113B HORIZONTAL DEFLECTION COILS
2011 TV CHASSIS SERIES A,B,C
PC-263
TUNER
SD-101
SR-101
HEIGHT
NOTES:
1. ALL VOLTAGES MEASURED WITH A VACUUM TUBE VOLTMETER TO CHASSIS GROUND.
2. SUPPLY VOLTAGE 117 VOLTS 60 CYCLE AC.
3. ALL VOLTAGES ARE DC + POSITIVE UNLESS OTHERWISE INDICATED.
4. ALL CAPACITANCES ARE IN MMFD AND ALL RESISTANCES ARE IN OHMS UNLESS OTHERWISE INDICATED.
5. VOLTAGE VARIES WITH SIGNAL LEVEL
6. 35 OHMS ON VHF MODELS, 300 OHMS ON UHF/VHF MODELS.
7. USED ON UHF MODELS ONLY.
8. VOLTAGE VARIES WITH ASSOCIATED CONTROL SETTINGS.
9. NOT USED IN SOME CHASSIS.
10. INDICATES MULTIPLE SECTION CAPACITOR.

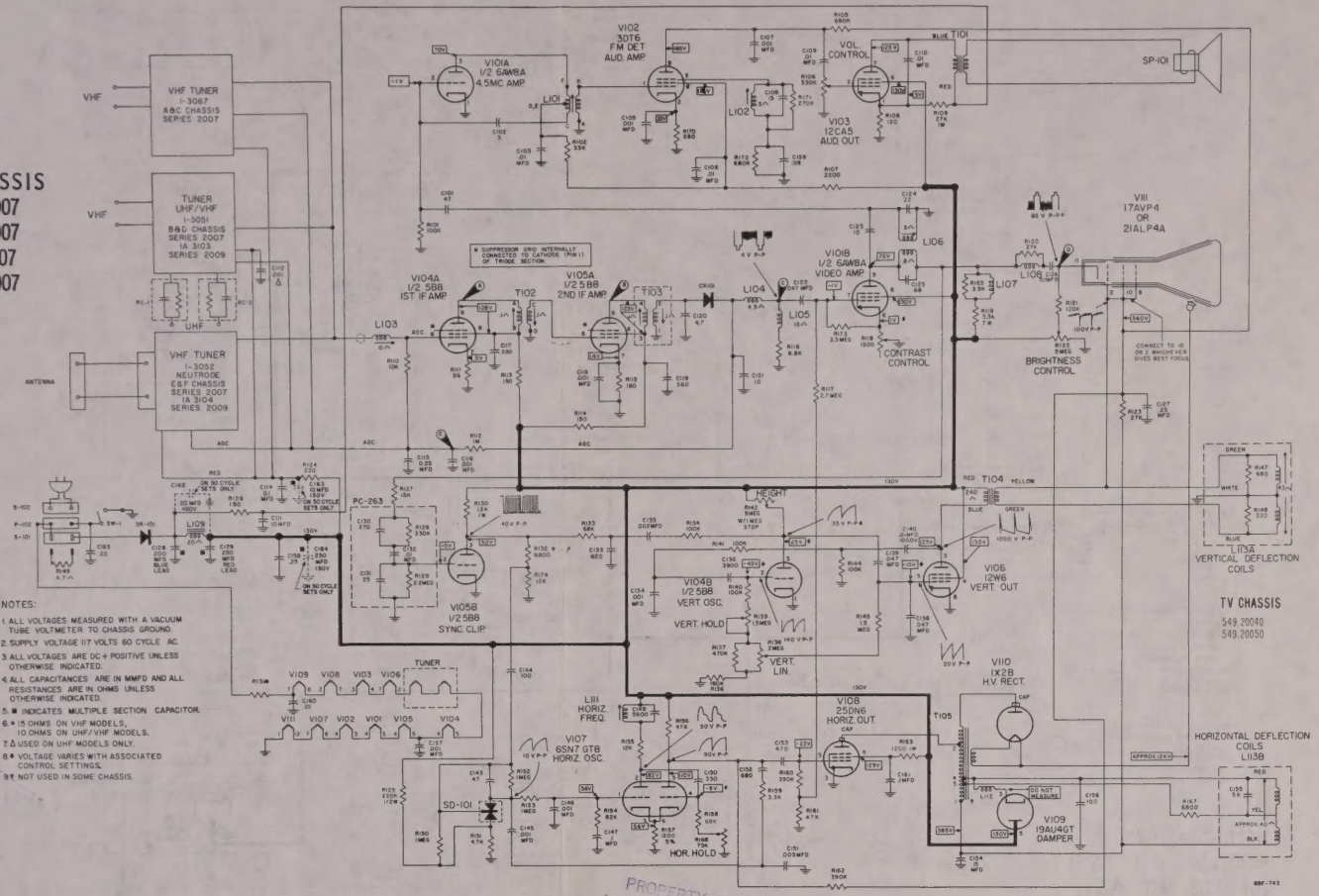
HALLICRAFTERS

MODELS	CHASSIS
10TS900B, M, T	A2011
10TS901B, M, T	B2011

SCHEMATIC COURTESY OF THE HALLICRAFTERS CO.

HALLICRAFTERS

MODELS	CHASSIS
17TS740B, M	A2007
17TS760B, M	A2007
17TS760BJX	E2007
17TS780B, M	A2007


VHF TUNER I-3067 A&C CHASSIS SERIES 2007
TUNER UHF/VHF I-3051 B&D CHASSIS SERIES 2007 IA 3103 SERIES 2009
VHF TUNER I-3052 NEUTRODE E&F CHASSIS SERIES 2007 IA 3104 SERIES 2009
V102 30T6 FM DET. AUD. AMP
V101A 1/2 6AW8A 4.5MC AMP
V103 12CA5 AUD. OUT
VOL. CONTROL
SP-101
V104A 1/2 5881 IST IF AMP
V105A 1/2 5881 2ND IF AMP
V108 1/2 6AW8A VIDEO AMP.
CONTRAST CONTROL
BRIGHTNESS CONTROL
V111 17AVP4 OR 21ALP4A
V1058 1/2 5881 SYNC. CLIP
V104B 1/2 5881 VERT. OSC.
V106 12W6 VERT. OUT
VERT. HOLD
VERT. LIN.
HEIGHT
L113A VERTICAL DEFLECTION COILS
TV CHASSIS 549.20040 549.20050
V107 6SN7 GT8 HORIZ. OSC.
HOR. HOLD
L111 HORIZ. FREQ.
V108 25DN6 HORIZ. OUT
V109 19AU4GT DAMPER
V110 1X2B H.V. RECT.
HORIZONTAL DEFLECTION COILS L1138
TUNER
PC-263
SD-101
SUPPRESSOR GRID INTERNALLY CONNECTED TO CATHODE (PIN 1) OF TRIODE SECTION.
CONNECT TO 10 OR 2 WHICHEVER GIVES BEST FOCUS
ANTENNA
AGC
VHF
UHF

NOTES:

1. ALL VOLTAGES MEASURED WITH A VACUUM TUBE VOLTMETER TO CHASSIS GROUND.
2. SUPPLY VOLTAGE 117 VOLTS 60 CYCLE AC.
3. ALL VOLTAGES ARE DC + POSITIVE UNLESS OTHERWISE INDICATED.
4. ALL CAPACITANCES ARE IN MMFD AND ALL RESISTANCES ARE IN OHMS UNLESS OTHERWISE INDICATED.
5. ■ INDICATES MULTIPLE SECTION CAPACITOR.
6. ● 15 OHMS ON VHF MODELS, 10 OHMS ON UHF/VHF MODELS.
7. Δ USED ON UHF MODELS ONLY.
8. ◆ VOLTAGE VARIES WITH ASSOCIATED CONTROL SETTINGS.
9. † NOT USED IN SOME CHASSIS.

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